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EXPANDING HORIZONS IN MEDICAL EDUCATION

Aura E. Severinghaus, Ph.D., New York

In discussing expanding horizons in medical education, I have no intention of proposing a new or revised curriculum for the medical schools to follow. I hope rather so to expand the horizon of the topic itself that a longer view may be taken of the opportunities now available for any person who wishes to prepare himself for professional responsibility in medicine.

In the introduction of our recently published report, "Preparation for Medical Education in the Liberal Arts College," I suggested that, in a sense, education is for every person "the vehicle which he builds and constantly remodels for his journey through life. The distance he may go and the speed with which he may travel depend in large part upon the character of the vehicle, although the direction of his journey is a matter of his spiritual as well as his mental resources." [1] There is in this analogy the implication that horizons constantly expand on the journey through life.

But horizons suggest to me a second analogy. I well remember my fascination when first I became aware of horizons. As a 9-year-old boy from the flat plains of Indiana, I stood one day on the shores of Lake Erie to watch a ship disappear over the horizon, first the hull, then the superstructure, and finally the tips of the ship's funnels and her masts, by this time sitting incongruously in the water. I remember vividly how I confirmed my father's statement that if, when only the masts and funnels remained visible, one climbed quickly to the tower on the pavilion, much of the ship would again come into view.

I was also more than eager to look out from the top of nearby Marblehead Lighthouse, that guardian of ships that ply the somewhat treacherous waters of Sandusky Bay and the offshore islands. I climbed the long spiral steps to find the keeper brushing out and trimming the big circular wick. Others were busy polishing the lenses and reflectors. As I looked on, I was told the story of Marblehead light, a story heavily weighted with statistics that I have long since forgotten. But I have remembered the keeper's statement that there were only four things about a lighthouse that were really important: (1) its location with unobstructed view, (2) its height, (3) its light, and (4) its lenses and reflectors that focus and throw its beam. "If we needed a better lighthouse at Marblehead," he said "or wished to increase its effective range we would make it higher or brighter or both." Nothing else mattered.

I have indulged in these reminiscences, as befits oncoming age, because I see in my boyhood lighthouse another analogy to education. What things are important? How well do we keep focused on the basic and essential ingredients? I sometimes wonder during the many discussions that urge modifications of the curriculum, propose new and better integrations, or suggest the merits of vertical versus horizontal correlations! In terms of the lighthouse, are these discussions concerned with height or brilliance or are they concerned with whether the lighthouse should be built octangular or round or of concrete, stone, or steel, or whether it should be painted the traditional white or given a more modern color?

SCIENCE AND MEDICINE

The first half of this century will always be known as "a scientific age." Among the major accomplishments of science, history will record the conquest of disease. Progress in this area has been spectacular beyond all expectation. With it has come, however, an almost staggering expansion of our scientific knowledge. More than ever before it has become necessary for those who wish to keep professionally informed to increase their scientific information. More than ever before it has become obvious that no person should even attempt to encompass the entire body of facts. This has naturally increased the emphasis on science in the future physician's education and resulted as well in a high degree of specialization in today's medical practice. The end is not yet in sight. I am reminded of a friend who recently hailed a taxicab in front of the Bureau of Archives in Washington. As the cab drew up he was still repeating audibly the inscription over the front entrance, "The Past is but a Prologue." "Do you know what that means?" he said to the driver, and, as is characteristic of Washington cab drivers, the driver quickly replied, "Yes sir, that means you ain't seen nothin' yet."

Associate Dean, Columbia University College of Physicians and Surgeons.

This paper was read on the occasion of the opening of the new Lankenau Hospital in Philadelphia, Dec. 9, 1953.

1. Severinghaus, A.; Carman, H. J., and Cadbury, W. E., Jr.: Preparation for a Medical Education in the Liberal Arts College, New York, McGraw-Hill Book Company, 1953, p. xv.

In many quarters the specializing physician as well as his education are being roundly criticized, both within and without the profession. The chief complaint against the specialist seems to be that he has, by directing his full attention to a limited area of medical practice, become competent in the scientific management of certain specific diseases but has lost the human touch and is no longer interested in the patient as a person. For this he is brought into sharp and unfavorable contrast with the general practitioner or the "horse and buggy" family doctor of yesteryear. In spite of the scientific triumphs over disease, can it be possible that the physician himself is today in danger of losing the faith and the affection of the people and his time-honored position in society? Dr. Howard Taylor voices this fear when he suggests that "The people are vaguely dissatisfied with the doctor as a person, for they feel that he has become too commercial or too scientific, too busy or too preoccupied to concern himself with their problems." [2]

Who is responsible for this sorry state of affairs? Again within and without the profession, the accusing finger is pointed at the physician's education. This is the culprit who needs to be chastized and reformed. Science, ever more science, they say, is crowding into the educational program and pushing aside the humanities and the social sciences. Lord Horder recently wrote, "The student's pre-medical program is lopsided; almost from the moment a boy or girl decides to be a doctor, the confines of his or her interest tend to become more and more narrow. Medicine, which should have the widest contacts of any profession, almost ceases to be a liberal education, for its cultural outlook dwindles from this moment." [3]

What added acclaim would be Sir William Osler's today were he able to say again what he wrote many years ago, "The wider and freer a man's general education, the better practitioner is he likely to be, particularly among the higher classes to whom the reassurance and sympathy of a cultivated gentleman of the type of Eryximachus may mean much more than pills and potions. In no profession does culture count for so much as in medicine, and no man needs it more than the general practitioner, working among all sorts and conditions of men, many of whom are influenced quite as much by his general ability, which they can appreciate, as by the learning of which they have no measure." [4]

SOCIAL MEDICINE

Perhaps the most active and vocal critics of medical education today, again both within and without the profession, are the zealous advocates for increased attention to the factors related to social medicine. I need not add that social medicine has nothing in common with socialized medicine about which the public hears so much.

The charge is advanced that the physician's professional education ignores the contributions of the social sciences and that he is not encouraged to develop any degree of social understanding or to bring his sense of social consciousness abreast of his scientific knowledge. In his practice, therefore, they maintain, he naturally ignores the important social and environmental factors in medicine in the treatment of the patient's disease; he fails to appreciate and take into account "the social relationships of man—his way of living, his family, his work, and his reactions to people and things about him, his emotional stresses, anxieties, fatigues, pleasures, or an inherent emotional constitution," all of which go to make up the total individual and have an important bearing upon an understanding of his health or disease.[5]

Now against this introductory background, I want to make a few entirely personal comments based upon my observation over a period of years during which I have been intimately associated with and intensely interested in the problems of medical education. More important to me than any other feature of this long association has been the opportunity to know many of the men and women who make up the profession and those who are year after year joining its ranks. In this splendid fellowship students and teachers in our schools and affiliated hospitals and practitioners in our community have expanded my own horizons. Reflection on the merits of any system of education without due regard to the persons who have been or are being educated is idle and fruitless.

PREPROFESSIONAL EDUCATION

Let us look first at the physician's preprofessional education. Some persons hoped that our recent survey would provide a blueprint for the course of study that every premedical student should follow. This we had no intention of doing, nor would we have been able to prepare such a blueprint even if it had been our intention. We have suggested, however, a goal that all persons, including those who contemplate a career as a physician, might seek to reach in their over-all program of education.

There appear to be four essential ingredients. In the clear and penetrating words of Prof. Theodore M. Greene, these are: "(1) training in the accurate and felicitous use of language as the essential condition of all reflection, self-expression, and communication with others; (2) training in the acquisition of factual knowledge of ourselves, our society and other societies, the physical world, and ultimate reality, so far as it is humanly knowable; (3) training in mature and responsible evaluation and decision in the controversial areas of social policy, morality, art and religion, and (4) training in synoptic comprehension, i. e., in the escape from the multiple provincialisms which bedevil mankind and in the attainment of larger and more inclusive perspectives." [7] For the educated man who wishes to become a physician (and should any but an educated man so aspire?) there need be added only certain additional factual knowledge and technical skill through which he completes his professional competence.

During the last two years I have found myself repeating this educational formula again and again, and not infrequently moved in all humility to continue directly

2. Taylor, H., in Ashford, M.: Trends in Medical Education, New York Academy of Medicine Institute on Medical Education, 1947, New York, Commonwealth Fund, 1948.
3. Horder, L.: Appeal of the Common Man, in Galdston, I.: Social Medicine, Its Derivatives and Objectives, New York Academy of Medicine Institute on Social Medicine, 1947, New York, Commonwealth Fund, 1949, p. 284.
4. Osler, W.: Aequanimitas, with Other Addresses, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1932, p. 286.
5. Social Medicine, Its Derivatives and Objectives, Galdston, I., editor, New York Academy of Medicine Institute on Social Medicine, 1947, New York, Commonwealth Fund, 1949, p. ix.
6. Deleted on proof.
7. Severinghaus, A., and others,[1] p. 85.

into the general confession, "We have erred and strayed like lost sheep—we have followed too much the devices and desires of our own hearts, we have left undone those things which we ought to have done and done those things which we ought not to have done."

This educational program is, however, not restricted to the years spent in college and professional school. It begins in earliest childhood and continues throughout life. Fortunately the opportunity is always present for us still to do "those things which we ought to have done," so let us look somewhat more closely at the suggested basic ingredients of education.

Accurate and Felicitous Use of Language.—It is astonishing that this first essential of our education has been so generally disregarded. From early childhood its importance is sensed. Who has escaped the torture of solitary confinement on a stool in the corner, where with face to the wall, we were deprived for a time of the felicitous use of language, quite probably because we had been discovered using it inaccurately. In spite of "reading and writing" and all efforts that ultimately reach their climax in "freshman English," there have always been complaints that American students are linguistically inadequate, that they lack a reasonable competence in oral and written expression, and that something should be done to make them more literate and articulate. For the physician the mastery of his own mother tongue is of first importance. His initial procedure in every patient contact is one of communication. From the basic medical history, which depends upon the accurate recording of observations and the patient's answers to properly phrased questions, to the final instructions of the physician to his patient, language yields priority only to professional competence.

As an ingredient of liberal education language should, however, include more than linquistic ability, even ability to communicate with others in a foreign tongue. Mathematics speaks with its precise but sometimes complicated symbolism, and the natural sciences have their technical vocabularies. To hear and understand the voices of music and painting, sculpture, and architecture is to appreciate "the vivid expressions of man's most sensitive evaluations of the meaning or meaninglessness of human life and the world we live in." [8]

The boundaries of good medical education are being expanded through a better appreciation of the importance of language. I have the impression from my recent visits to many campuses that in no other area of education are the liberal arts colleges making greater progress in improving their contribution to the student.

Training in Acquisition of Factual Knowledge.—To language the medical student must add the facts on which he bases his professional usefulness. This is indeed a large order. Although I am sure that many have tried, no one seems to have discovered how to eliminate the necessity for facts from the educational process. Even those more progressive methods that strive so to disguise facts that they may be acquired unconsciously are no more effective than orange juice with castor oil. Facts are increasing at an alarming rate, and even now no one has the capacity or the time to know all the facts. Every academic discipline must deal with factual knowledge in its own way. Medical education is no exception. Not long ago I visited a liberal arts college to listen to a panel of physicians, all returning graduates of the school, discuss the question, "If I could do it over again, in the light of my professional education and the experience gained from practice, what changes would I make in my liberal arts education?" Several of these doctors cited long lists of facts that they had learned both in college and medical school, facts that they had never used and that happily they had forgotten. They pleaded that precious time be alloted to more useful intellectual pursuits. I am sure they are at least partly right. But I am also sure that some facts are like the booster rockets that launch the plane with a quick burst of added power and then are jettisoned in flight, having served their purpose. Facts may be useful even if we forget them. But whatever the discipline, writes Professor Greene, it is important that a person "learn to recognize a fact when he encounters one, that he know how to test a claim to factuality, and that he know how to find available facts quickly, efficiently, and accurately when the need arises. Above all else, however, [he] needs to develop a passion for fact, a hunger for realism, a hatred of illusion and evasion. . . . It is the mark of a mature man to want to know all the important facts available to him, however disagreeable they may be, so that he can do his best to change them or to adjust himself to them. Our academic concern with facts is fully justified, provided that we do not idolize isolated facts, and provided that we particularly stress fact finding, fact testing and fact facing," in other words, that we become "fact conscious and loyal to fact in all its forms. . . . The natural sciences are pre-eminent in the art of fact finding, fact describing and fact testing. Yet the facts regarding ourselves as human beings which the social sciences are gradually discovering are of even greater importance to us than is a knowledge of the physical world. . . . Meanwhile, the artist in his way, and the philosopher, historian, and the theologian in their ways are no less concerned with facts and no less committed to a fact-respectful realism." [9]

Training in Evaluation and Decision with Wider Perspectives.—The development of mature and responsible evaluation and wider perspectives is perhaps the central core of liberal education. It is here that values and value judgments are met. Our society has the right to, and does, expect its educational institutions to assist its students as they continue their search for a sound set of moral and spiritual values. These cannot be instilled or inculcated by the liberal arts college merely by seeing to it that every student registers for some courses in the humanities or social sciences. But courses in these areas, if they are properly taught, are concerned with responsible and mature evaluations and have, therefore, a natural opportunity to assist the student to become better aware of himself and of his place in society. Here lies the all important problem of motivation. It has been said, "There is no greater or more important subject in the history of intellectual endeavor than the subject of what a man ought to do and how he can tell what that is." [10] In spite of the

8. Severinghaus, A., and others,[1] p. 86.
9. Severinghaus, A., and others,[1] pp. 326, 327, and 329.
10. General Education in School and College, a committee report by members of the faculties of Andover, Exeter, Lawrenceville, Harvard, Princeton, and Yale, Cambridge, Harvard University Press, 1952.

most rigorous and careful selection of students, few are satisfied with the sense of civic and social responsibility that our college and professional school graduates exhibit. Too many of them hesitate to use words such as "devotion," "dedication," or "vocation," which are among the noblest in our vocabulary. Too many of them feel that it is sentimental to regard one's life work as a "high calling" or that their abilities, while theirs, are nevertheless held in trust. Do they forget that the Oslers, Grenfells, and Albert Schweitzers shine as first-magnitude stars in the medical firmament?

I see expanding horizons in the liberal arts college. Bigotry and bias are under attack, and bedeviling provincialisms are on the run. Students, faculty, and administration are sharing a growing conviction that the development of a sense of values is the province of the college as a whole, that the responsibility should not be delegated to special teachers or special departments, such as sociology, philosophy, or religion, but must rest squarely upon the shoulders of every person in the college community.

I have placed strong emphasis upon the liberal education of the future physician because it has direct bearing upon the more important innovations now appearing in the curriculums of not a few medical schools. Although these new educational programs differ, they have one feature in common, namely, they require the undergraduate medical student to observe patients in their home environments. It is not my intention to review or pass judgment on these varied "into-the-home" programs, but to suggest that there are basic reasons why they have been organized. Two objectives seem obvious: first, to develop or foster in the student a better appreciation of human values, an interest in the patient as a person, and an awareness of the importance of the social and environmental factors that surround the patient and influence his health and disease and second, to provide the student with the opportunity to observe these factors first hand and thereby improve his opportunity for better learning within the framework of the curriculum.

It is unfortunate that many persons have assumed that only those schools that have adopted curricular changes specifically slanted toward teaching the social and environmental factors of medicine are interested in problems of social medicine. I am going to assume that good medical teachers without exception recognize the importance of social and environmental factors in the diagnosis and management of a patient's illness. I am going to assume also that they would be the first to adopt new techniques that guaranteed improvement in the learning process. Why then have not these new ventures in medical education met with immediate and universal enthusiasm and adoption? Why on the contrary have they resulted in sharply expressed differences of opinion? Charges of "ivory tower medicine" have been countered by "turning the clock back 25 years." If my assumptions are correct, there is no controversy over objectives, but differences of opinion exist as to the educational methods by which the objectives can best be reached.

EMPHASIS ON LEARNING

There is in education today a widespread and wholesome tendency to increase the emphasis upon learning rather than upon teaching. Learning follows the same pattern in all educational disciplines. It consists of making valid observations, sifting these for relevance, and then correlating those that have significance. Especially when the student is on his own, it is necessary that his personal bias be eliminated and that he strive for precision and efficiency in his pursuit of factual knowledge. But it does not follow from a recognition of the increased importance of learning that teaching is to be discarded. Spoon feeding has little to defend it, but good teaching is still necessary to guide and assist the student in the development of sound and efficient habits of observation. Good teaching is still profitable.

Over the door of a Woods Hole laboratory in which I used to teach was an inscription that originally hung in the laboratory of Louis Agassiz, "Study nature, not books." We looked with daily reverence upon these words, but, summer being as short as it is, we always "studied nature with books" and with teachers. The total span of years now required for the education of a physician is already too long. It will not be shortened by permitting the student to flounder at any stage of his educational career.

At first glance, sending the student out into the home on his own would appear to be in line with the new emphasis upon learning. If a medical student visits the home, his one object is to learn the patient's reactions to his own environment. Some medical faculties have the fear that the untutored medical student, especially in his earlier years, may come away with his own impressions rather than the patient's. Some faculties also believe that undergraduate time is precious and that the student can best spend it learning in the hospital under expert supervision how to obtain from the patient through skilled history taking the patient's reaction to those important environmental factors that have a bearing upon his illness. Furthermore, some faculties emphasize the importance of selecting students for the study of medicine who have already given evidence of a sense of social understanding at the time they enter medical school. An educational program based upon these several assumptions is valid, and it may achieve the objectives of social medicine as readily as do some of the newer ventures in education designed for that specific purpose.

There is valid and available evidence in every teaching hospital to indicate whether social and environmental factors are recognized. This evidence is to be found in the patient's chart, which contains the history and clinical comments of the professional staff.

Dr. Jean Curran, who was co-chairman of a committee that in 1948 published a "Study of the Teaching of Social and Environmental Factors in Medicine," [11] told me recently that the examination of patients' charts in many teaching hospitals revealed the great importance of the attitude of the chiefs of services. If the chief was himself interested in the patient as a person, then regularly signif-

11. Widening Horizons in Medical Education: A Study of the Teaching of Social and Environmental Factors in Medicine 1945-1946; A Report of the Joint Committee of the Association of American Medical Colleges and the American Association of Medical Social Workers, New York, Commonwealth Fund, 1948.

icant entries were found on the patient's chart made at every professional level from the chief attending down to the lowly third year clinical clerk. What is more disturbing, however, was Dr. Curran's observation that residents accustomed to making such entries in a proper environment rapidly ceased to do so if they transferred to another service where an atmosphere of indifference prevailed. The attitude and example of the chief of service is crucial, but even more important is the development within the student of a sense of social understanding so vital that he will continue to live and work in keeping with his sense of values even in an unfavorable environment.

IVORY TOWER MEDICINE

It is regrettable that our great medical centers, because they have become citadels of scientific progress, are frequently and thoughtlessly dubbed "ivory towers," with the implication that they have lost the human touch. In speaking of ivory towers I should like to suggest that, if possible, the precious stuff of which the tower is made be forgotten. "Ivory" does for "tower" what "mink" has unfortunately done for "coat." Let us rather emphasize the "tower." One can be lofty without being aloof. A tower is after all a height from which one gets an expanded view of the horizon, a height from which one can still see the achievements of yesterday in the full perspective of the possible accomplishments of tomorrow.

The caption "horse and buggy" doctor by its very contrast with "ivory-towered medicine" illustrates a major trend that has had and still has a place in providing medical service to the public. Instead of doctors visiting the home, patients now visit the diagnostic clinics and the hospitals. This is especially true in the urban areas. It is not entirely due to a change in attitude on the part of physicians. Often it is not realized that not only is the "horse and buggy" doctor disappearing but also "the horse and buggy home." I wish merely to comment that the factors related to the change in medical service from a "home delivery system" to a "cash and carry" basis are complex and involved. In spite of shortcomings, the new trend is providing better medical care to the total population than it has ever had before. The magnificent expansion of the facilities at Lankenau Hospital are in keeping with this trend and dedicated to this purpose.

EDUCATION OF THE PUBLIC

I turn finally and naturally to an aspect of medical education that has not received sufficient attention. This is the education of the public. To utilize the expanded facilities now being made available at the new Lankenau Hospital, the public must become aware of them, must know not only that they are available but how and when they can be used to advantage.

In lecturing to medical students on the endocrine glands, I was always careful to point out that in any attempt to understand their function it was as important to study the tissue cells that reacted to the secretion as it was the gland cells that produced it. I suggested that the process was similar to the forward pass in football. The same illustration applies equally well to supplying the public with medical care. The forward pass to be effective must have not only the skilled and educated passer who can deliver the ball but trained receivers who can gather it in. Physicians will never be able to deliver effective medical service until the public is properly educated to receive it.

Nothing is more important than public education. The history of the attitude of the public toward a community hospital is well known. We recall that hospitals were first organized so that homeless or friendless persons might depart from this life in surroundings that attempted to sooth their agony and allay their fears. Even within our memory patients entered the hospital only when faced with a most critical illness or a desperate emergency. To mention among friends that one of their number had been taken to a hospital was certain to bring a serious hush to pleasant conversation.

The proposal to make the hospital a community center for citizens in health as well as in sickness is exciting. The plans to provide not only hospital care and a diagnostic and consulting service but to be concerned with preventive medicine through emphasis upon health conservation, child and maternal welfare, care of convalescents at home and safeguards against contagious diseases, unnecessary fatigue and useless accidents in industry is one of the most progressive forces in medicine today. But the plans of Lankenau Hospital to provide an auditorium "where the public can gather for lectures, forums, and demonstrations, and a Health Museum, where animated displays will illustrate the 'panorama of life' " is unique and pacesetting. I know of no hospital that has had the vision to propose such a program as this under the full-time supervision of an educational director. The progress of Lankenau Hospital in community education will be watched with great interest and may well set a pattern for the future. We salute you for expanding the educational horizons so that, in addition to the teaching of doctors, nurses and medical students, the hospital now enters into a vigorous and significant program of public instruction.

630 W. 168th St.

Pernicious Anemia.—Thomas Addison, physician to Guy's Hospital, London, published his classic description of pernicious anemia in 1855. Since then nature has held almost a ninety-nine-year lease on a recognized mystery. Happily, her foreclosure of the mortgages on the lives of the tenants of this disorder has become rare since 1926. At that time George R. Minot and William P. Murphy, of Boston, discovered what was in effect a regular means of cure for pernicious anemia. Although their liver feeding and its subsequent refinements by others saved many lives, the exact cause of the disease has remained obscure. Today, however, it can be stated with assurance that pernicious anemia is usually an example of a highly specific isolation of the affected person from his alimentary environment. Thus, this disease would not develop if the patient could effect daily the transfer of a millionth of a gram of vitamin B_{12} the distance of a small fraction of a millimeter across the intestinal mucosa and into the blood stream. This he cannot do, principally as a result of failure of his stomach to secrete into its lumen some essential but still unknown substance. Yet the patient may each day absorb without much difficulty the products of the digestion of many grams of carbohydrate, fat or protein from foods that in addition may contain consequential amounts of vitamin B_{12} in terms of his trivial need. Such starvation in the midst of plenty has elsewhere been called "conditioned deficiency disease."—William B. Castle, M.D., Development of Knowledge Concerning the Gastric Intrinsic Factor and Its Relation to Pernicious Anemia, *New England Journal of Medicine,* Oct. 8, 1953.

LATE RESULTS OF SURGICAL TREATMENT OF CARCINOMA OF THE ESOPHAGUS

Richard H. Sweet, M.D., Boston

In the management of malignant tumors the surgeon must adopt a policy about treatment that depends on what he can accomplish with the methods available. With few exceptions this means that he must choose extensive surgical extirpation of the disease according to established principles, the employment of roentgen ray therapy that usually has a much smaller prospect of cure, or, in some instances, treatment for symptoms alone. If the emphasis is placed on the hope of cure, the number of patients operated on will be relatively small. If the intent is to secure relief from the discomforts of the disease and possible cure in the more favorable cases, the benefits of surgery will be offered to much larger numbers.

The necessity for observing these principles is no better exemplified than in the treatment of carcinoma of the esophagus. Some physicians believe that surgical resection in the management of this disease should be employed only in the favorable, and therefore possibly curable, cases. A large number of the patients who are treated by these physicians will be denied the relief that the operation is known to provide. Furthermore, the number of surgeons who have adopted this policy of conservatism is increasing because of the unfortunate discouraging reports that have appeared in the current literature.

There is reason to believe, on the other hand, that the benefits of surgical extirpation should be offered to the largest possible number of patients with carcinoma. The possibility of long survival with possible cure and relief from symptoms encourages one to adopt this more radical approach. The data given, based on 14 years of experience with the surgery of this disease, are offered in support of this theory.

NATURE OF THE PROBLEM

In any discussion of the benefits of surgical treatment for carcinoma of the esophagus it is important to have in mind the problems peculiar to the esophagus because of its location and anatomic relations. The technical difficulties seen in the removal of a growth in the cervical segment are different from those presented by a tumor in the superior mediastinal segment or by a growth in the midthoracic area or at the cardia.

These problems, centering about the topographic relations of the organ itself, are closely related to the behavior of the disease and its tendency toward early metastasis to groups of lymph nodes. The possibility of removing these nodes depends on their location in relation to other structures. For detailed consideration of these matters, reference may be made to previous publications.[1] The point to be stressed is that in any discussion of the results of treatment cases must be grouped according to the four locations of the growth, which are of anatomic and pathological importance.

In evaluating the results of treatment it should be kept in mind that most patients are old and that, if they are grouped according to age by decades, each succeeding group contains increasing numbers of cases. This is illustrated in a previous paper.[1e] Although in the older person the mortality from operation is greater and the probable duration of life after the operation is shorter, advanced age alone should not be considered a contraindication to surgery for this disease.

RESULTS OF EXPERIENCE

The hope of cure and of palliation of symptoms should not lead to indiscriminate operations on all patients seen. A careful clinical evaluation of the patient's condition must be made and signs of hopeless inoperability, such as the presence of distant metastases or of irremovable local extension to the trachea or bronchi or other structures, should be noted. After the obviously hopeless cases are excluded, the number of patients who have exploratory operations depends on the location of the growth (table 1). As an example, in the three years from 1950 through 1952 operations were performed in 3 out of 4 cervical segment cases; 5 out of 7 superior mediastinal segment cases; 34 out of 39 midthoracic segment cases; and 32 out of 33 low esophagus and cardia cases. In the first category, a resection was carried out in 2 of the 3 cases; in the second category, in 3 of the 5 cases; in the third category, in 27 of the 34 cases; and in the fourth category, in 28 of the 32 cases actually operated on. Thus, at least in the three years cited, a resection was actually performed in 69% of the patients seen who had carcinoma of the midthoracic segment and in 85% of the patients seen who had a growth in the lower esophagus and cardia. The mortality of 25% in the group with carcinoma of the midesophagus is the same as previously reported,[1e] but in the groups with carcinoma of the lower esophagus there has been a decline in the mortality rate in recent years to 7%.

LATE RESULTS OF TREATMENT

From 1939 through 1952, 450 patients with carcinoma of the esophagus at all levels, including the cardia, were operated on. It was possible to perform a resection with restoration of continuity of the alimentary canal in 303 patients. Those patients with carcinoma of the midthoracic segment who were operated on before 1944, at a time when the Torek operation for excision of the

1. Sweet, R. H.: (*a*) The Treatment of Carcinoma of the Esophagus and Cardiac End of the Stomach by Surgical Extirpation: 203 Cases of Resection, Surgery **23**: 952-975, 1948; (*b*) The Surgical Management of Carcinoma of the Midthoracic Esophagus: Preliminary Report, New England J. Med. **233**: 1-7, 1945; (*c*) Carcinoma of the Midthoracic Esophagus: Its Treatment by Radical Resection and High Intrathoracic Esophagogastric Anastomosis, Ann. Surg. **124**: 653-666, 1946; (*d*) Carcinoma of the Superior Mediastinal Segment of the Esophagus, Surgery **24**: 929-938, 1948; (*e*) The Results of Radical Surgical Extirpation in the Treatment of Carcinoma of the Esophagus and Cardia with Five Year Survival Statistics, Surg., Gynec. & Obst. **94**: 46-52, 1952.

thoracic part of the esophagus was still being used, are excluded from consideration. The results of this series have been published before.[1c] The results of treatment of the 303 patients are as follows.

Cervical Segment.—In all of these the method evolved by Wookey has been employed.[2] Seventeen patients were operated on, and in 10 patients the growth could be removed. There were no operative deaths in this group. Although the operation is an excellent one, because it provides relief from discomfort and complete restoration of the ability to swallow, the frequency of metastasis to the cervical and superior mediastinal lymph nodes has been so great that the majority of these patients have died ultimately of recurrence of the disease. Three are alive at present. Of these, one was recently operated on and two were operated on 18 months ago. These patients are thus far well, but they were operated on only because the growth in each instance was exceptionally small and did not show, even at exploration, lymph node metastases.

It seems obvious that, with carcinoma of the cervical segment of the esophagus, the employment of the Wookey procedure is satisfactory only in small tumors that have not yet metastasized to the regional nodes. In all other cases the policy has been to refer the patient for roentgen treatment. The results of this form of therapy have been good in the few patients who were

TABLE 1.—*Location of Tumor in 450 Patients Operated on*

Location of Tumor	Total	Exploration Only	Resection with Anastomosis
Cervical area	17	7	10
Superior mediastinal area	9	3	6
Midthoracic area	182	62	120
Low esophagus and cardia	242	75	167
Total	450	147	303

treated in this manner. In several instances the results were actually better than those in any other segment of the esophagus. Several such patients have survived three or more years with no impairment of swallowing function. This experience is similar to that reported by Buschke and Cantril.[3]

Superior Mediastinal Segment.—Fortunately, carcinoma originates in this segment infrequently. There were only nine patients in the entire series presented; in six, a resection was performed. The technical difficulties of resection for a growth in this area are the greatest of any location in the esophagus, and the prospect of adequate removal of involved regional lymph nodes is exceedingly unfavorable. For this reason in the small group of patients operated on there have been no long survivals. One patient lived two years and two months. The operative mortality is high; three out of six patients on whom a resection was performed died. For the reasons just mentioned it seems best to employ surgical resection in this group of patients only in cases in which the tumor is small and presumably free from lymph node metastasis. Such a situation cannot be expected to prevail in a large percentage of the cases, and the number of patients with disease in this segment who can have the benefit of surgery must therefore be small.

Midthoracic Segment.—One hundred eighty-two patients with carcinoma of the midthoracic segment of the esophagus were operated on. The growth was resected and a primary esophagogastric anastomosis was carried out, usually above the level of the aortic arch, in 120 patients. This operation was first performed early in 1944; the series is not quite as large and the length of experience not as great as the series of cases of carci-

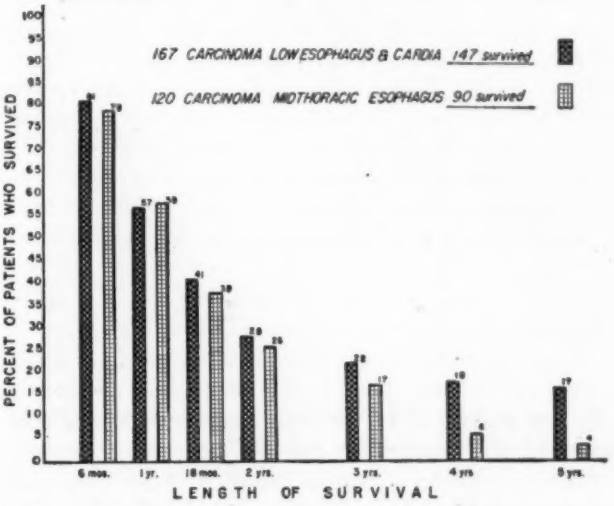

Fig. 1.—Length of survival of patients after resection for carcinoma, showing comparison of the results in cases of carcinoma in the midthoracic area and those in the low esophagus and cardia. All resections, both palliative and curative, are included.

noma arising in the lower end of the esophagus or at the cardia. Of this group 30 died as a result of the operation. This operative mortality of 25% reflects the severity of the procedure, which involves extensive mediastinal dissection and the performance of an anastomosis with the stomach high in the chest.

TABLE 2.—*Carcinoma of the Midthoracic Section of the Esophagus*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
No. operated on	49	21	17	8	11	5	9	120	....
Deaths in hospital	11	6	4	2	2	2	3	30	....
No. analyzed	38	15	13	6	9	3	6	90	....
Survivals at									
6 months	30	14	9	5	5	3	..	66	79%
12 months	22	14	6	4	1	2	..	49	58%
18 months	15	9	3	3	1	1	..	32	38%
2 years	9	6	2	3	1	..	..	21	26%
3 years	5	4	1	2	..	..	..	12	17%
4 years	2	2	0	..	..	..	..	4	6%
5 years	1	1	..	..	..	..	..	2	4%

As will be seen in figure 1 (tables 2 and 3), the five year survival of the group of 90 survivors is 4%. This low percentage of five year survival in the midthoracic cases bears comment. In the first place, 37 patients were operated on less than five years ago so that those alive among this group were not entered in the five year sur-

2. Wookey, H.: The Surgical Treatment of Carcinoma of the Pharynx and Upper Esophagus, Surg., Gynec. & Obst. **75**: 499-506, 1942.

3. Buschke, F., and Cantril, S. T.: Results of Supervoltage Roentgenotherapy of Esophageal Carcinoma, J. Thoracic Surg. **26**: 105-108, 1953.

vival statistics when the follow-up data were obtained (January, 1953). In the second place, the location of the growth in the midesophagus, though more favorable than in the neck or superior mediastinum, makes it relatively difficult to obtain a sufficiently wide extirpation of the primary tumor and of the regional lymph nodes to remove all the disease.

TABLE 3.—*Carcinoma of the Cardia and Lower Section of the Esophagus*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
Total operated on	94	15	22	7	10	10	9	167	....
Deaths in hospital	13	0	3	1	1	1	1	20	....
Total analyzed....	81	15	19	6	9	9	8	147	....
Survivals at									
6 months.....	69	9	14	5	7	8	..	112	81%
12 months.....	50	7	7	3	7	5	..	79	57%
18 months.....	38	3	5	1	6	..	..	53	41%
2 years.....	29	2	4	1	1	..	..	37	28%
3 years.....	23	2	2	0	..	..	..	27	22%
4 years.....	19	1	1	..	..	..	..	21	18%
5 years.....	16	0	..	..	..	..	..	16	17%

In any discussion of survivals after resection of carcinoma it is important to classify the cases according to the extent of the disease at the time of the operation and the probable prognosis. It should be stated whether the operation can be expected to provide only palliation because metastases have not been removed or whether there is a fair prospect of cure because the gross evidence of disease has been removed. The cases in the latter category may be referred to as the "curative resection."

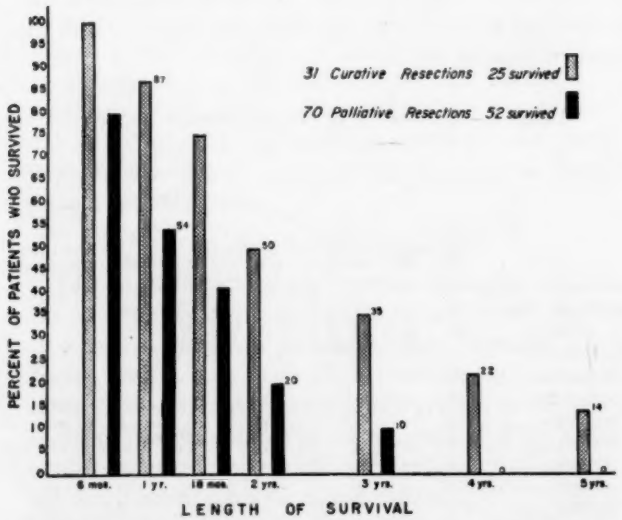

Fig. 2.—Length of survival of patients after resection for carcinoma of the midthoracic segment of the esophagus. The results of the curative and palliative resections are compared.

When this distinction is made a more hopeful view of the results in the treatment of carcinoma of the midthoracic esophagus can be obtained. In the series at hand a careful appraisal of each case was made on the basis of the operative findings. It was possible to do this in 101 of the 120 cases in the group. Of these, 24 patients died as a result of the operation. The survival figures for the patients who left the hospital are shown in figure 2 (tables 4 and 5). Instead of 4% five year survivals, which is the figure obtained if all cases are included, we observe that actually 14% of the patients survived five years when the findings at operation appeared to be favorable.

In the group of patients for whom the operation was strictly palliative, it is interesting to observe that 10% of the group with unfavorable prognoses actually lived as long as three years after the operation; that 20% survived two years; and that 54% lived one year. When it is pointed out that the great majority of these patients died of distant metastases and that they were relieved of their inability to swallow until their death, it is obvious that the relief given by the operation was great.

TABLE 4.—*Curative Resections of Midesophagus*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
Total operated on	12	6	6	2	2	1	2	31	....
Deaths in hospital	4	0	2	0	0	0	0	6	....
Total analyzed....	8	6	4	2	2	1	2	25	....
Survivals at									
6 months.....	8	6	4	2	2	1	2	25	100%
12 months.....	7	6	3	2	1	1	..	20	87%
18 months.....	6	6	3	2	1	1	..	17	75%
2 years.....	3	4	2	1	1	..	..	11	50%
3 years.....	3	3	1	0	..	..	..	7	35%
4 years.....	2	2	0	..	..	..	..	4	22%
5 years.....	1	1	..	..	..	..	..	2	14%

TABLE 5.—*Palliative Resections of Midesophagus*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
Total operated on	32	10	7	3	8	4	6	70	....
Deaths in hospital	7	4	2	0	1	2	2	18	....
Total analyzed....	25	6	5	3	7	2	4	52	....
Survivals at									
6 months.....	23	6	1	3	3	2	3	41	79%
12 months.....	14	6	1	2	0	1	..	24	54%
18 months.....	9	2	0	1	0	0	..	12	41%
2 years.....	6	2	0	1	0	..	..	9	20%
3 years.....	3	1	0	0	..	..	..	4	10%
4 years.....	0	0	0	..	..	..	..	0	0
5 years.....	0	0	..	..	..	..	..	0	0

Considering the difficult nature of the problem presented by carcinoma of the midthoracic segment of the esophagus, these prospects should not be considered too discouraging.

Lower Segment and Cardia.—The series of resections for carcinoma of the lower esophagus and cardia comprises 167 cases out of 242 patients operated on. Of these cases 40 were epidermoid carcinoma, 2 were adenoacanthoma, and 125 were adenocarcinoma. There were 20 deaths during operation, a mortality of 12%. Figure 1 shows the curve of survival for the 147 patients who did not die immediately after the operation. From this it appears that 17% of all patients can be expected to survive five years when the growth is at or near the cardia. Of course, as mentioned above, some of the total

group had not been operated on long enough ago to be included in the five year survival group. As shown in a previous report [10] there is no difference, in terms of survival of patients, between epidermoid carcinoma or adenocarcinoma. The five year survival of the group of patients with epidermoid carcinoma considered separately was exactly 17%.

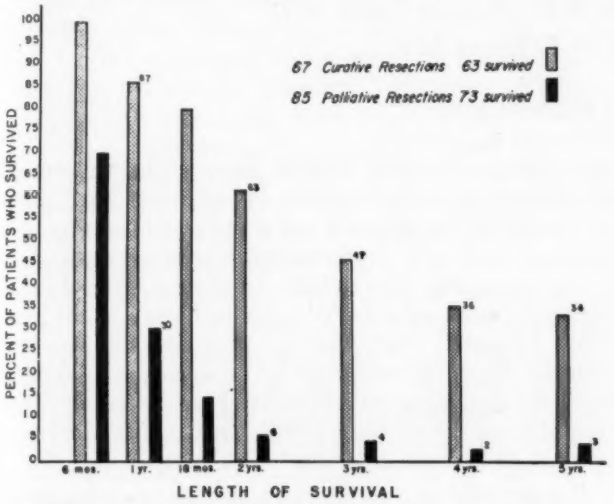

Fig. 3.—Length of survival of patients after resection for carcinoma of the lower esophagus and cardia. The results of curative and palliative resections are compared.

TABLE 6.—*Curative Resections for Carcinoma of Cardia*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
Total operated on	46	1	6	1	5	4	4	67	....
Deaths in hospital	3	0	0	0	0	0	1	4	....
Total analyzed....	43	1	6	1	5	4	3	63	....
Survivals at									
6 months.....	43	1	6	1	5	4	3	63	100%
12 months.....	39	0	4	1	5	3	..	52	87%
18 months.....	35	0	4	1	5	3	..	48	80%
2 years.....	28	0	3	1	3	..	..	35	63%
3 years.....	22	0	2	0	..	..	..	24	47%
4 years.....	18	0	0	..	..	..	..	18	36%
5 years.....	15	0	..	..	..	..	..	15	34%

TABLE 7.—*Palliative Resections for Carcinoma of Cardia*

	Prior to 1947	1947	1948	1949	1950	1951	1952	Total	% of Survival Among Patients Who Left the Hospital
Total operated on	38	12	15	6	4	6	4	85	....
Deaths in hospital	8	0	2	1	0	1	0	12	....
Total analyzed....	30	12	13	5	4	5	4	73	....
Survivals at									
6 months.....	23	9	9	4	2	4	4	55	70%
12 months.....	8	5	3	1	2	2	..	21	30%
18 months.....	3	2	1	0	2	2	..	10	14.5%
2 years.....	2	1	1	0	0	..	..	4	6%
3 years.....	1	1	0	0	..	..	..	2	4%
4 years.....	1	0	0	..	..	..	..	1	2%
5 years.....	1	0	..	..	..	..	..	1	3%

The figure 17%, however, does not give the true picture when the fact that many of the operations were strictly palliative is taken into account. This group of cases was therefore analyzed as to whether the operation could be expected to be "curative" or palliative; of the 132 cases in which a definite decision could be made, 67 operations could be called curative and 85 were obviously palliative. Figure 3 gives a graphic comparison of the results among those who survived the operation (tables 6 and 7). Thus when the findings at operation are such that it appears likely that all the local growth and possible regional metastases have been removed (curative resection), at least 34% of the patients can be expected to survive five years. This figure compares favorably with recent end result statistics for surgical treatment of carcinoma of other organs. Of interest also is the fact that even among the group of cases in which palliative resection was done, one patient (3%) lived more than five years. The knowledge that the majority of these patients were relieved of their dysphagia until their death means that palliation was worth while for them.

CONCLUSIONS

There is further substantial evidence that in carcinoma of the midthoracic and lower esophagus, including the cardia, the operation of resection with esophagogastric anastomosis gives worth-while palliation of distressing dysphagia. It is shown that when the cases are reclassified into those the surgeon thought curable and those he thought incurable, the results in terms of five year survival after resection are 14% for cases of carcinoma of the midthoracic segment and 34% for cases of carcinoma of the lower esophagus and cardia. The results with the latter group are identical whether the growth is epidermoid carcinoma or adenocarcinoma. The value of esophagectomy for carcinoma of the midthoracic and lower segments of the esophagus is emphasized.

205 Beacon St.

Pheochromocytoma.—The arterial hypertension caused by . . . [pheochromocytomas] can be completely alleviated. . . . [They] are relatively rare tumors of chromaffin sympathetic nerve tissue, which are most often seen in the adrenal medulla or in one of the many areas where chromaffin tissue occurs, and which produce epinephrine and/or norepinephrine in abnormal quantities. The symptoms associated with pheochromocytoma can be extremely varied and bizarre and may simulate many other diseases. . . . Many patients with pheochromocytoma may have symptoms resembling those of acute anxiety attacks or other psychiatric disorders. . . . It is . . . important . . . to rule out pheochromocytoma in all patients with hypertension, especially when the explanation of the symptoms and the hypertension is not satisfactory. Failure to diagnose the presence of a pheochromocytoma usually results in a progressive hypertension, progressive arterial disease, and eventual fatal outcome. The prognosis in patients afflicted with a pheochromocytoma is invariably fatal if the tumor is not removed. The hypertensive crises in those with a history of paroxysms become more and more severe until death results from a violent crisis. The cardiovascular changes in a patient with chronic hypertension due to pheochromocytoma may not cause death as soon as those that occur in the paroxysmal type. The importance of recognition of these tumors lies in the fact that successful extirpation ordinarily results in alleviation of the hypertension and its attendant vascular disease. . . .—Commander R. D. Ross; Lieut. R. E. Mitchell; Lieut. W. E. Larsen, and Commander J. R. Dillon, Pheochromocytoma: Successful Surgical Removal in Two Patients, *U. S. Armed Forces Medical Journal,* March, 1954.

PROSTATIC CANCER

VIII. DETECTION OF UNSUSPECTED ADENOCARCINOMA IN THE AGING MALE POPULATION

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and
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So common is the finding of unsuspected carcinoma of the prostate in aging men that an organized study of the incidence of this neoplasm is indicated. A report on the results of such a study on men who did not seek medical advice spontaneously and the considerations that prompt the study will be presented.

From autopsy studies of 100 men over 50 years of age who died of nonurologic diseases, Rich reports a 14% incidence of occult carcinoma of the prostate.[1] Moore describes a similar necropsy survey that yielded 20.5% incidence of this disease.[2] Graves and Militzer note bony metastases in 67.5% of 120 hospitalized elderly men with prostatic cancer at the time of the first urologic examination.[3] Mayer and Roswit state that 95% of patients having prostatic cancer had demonstrable metastases when the diagnosis was first made.[4] Many other clinical publications contain discussions of the unanticipated histopathological diagnosis of prostatic carcinoma in surgically removed specimens, and of the various treatments recommended in such instances.[5]

MEANS OF DIAGNOSIS

In an effort to cope with this problem, Huggins, Miller, and Jensen have devised a cancer diagnostic test to be performed on the serum.[6] The results of this test and of those tests described by other workers have proved equivocal.[7] They must therefore be regarded as currently unsuited for accurate preoperative diagnostic guidance. Cytological study of expressed prostatic secretion has been advocated for the detection of early prostatic cancer,[8] but such studies do not seem to be uniformly reliable. Moreover, this method is subject to the general criticism directed against any form of manipulation of tissue suspected of harboring a malignant growth. There is particularly good reason for avoiding massage of cancers that characteristically spread by lymphatic channels. Adenocarcinoma of the prostate is such a tumor.

Hudson, Butler, Ranson, and Sabiston described an evaluation of 79 consecutive cases of surgically treated prostatic enlargements in which all the commonly used clinical and laboratory techniques for detecting cancer were utilized.[9] The diagnostic innovation embodied in their report is the performance of open perineal prostatic biopsy on each patient prior to a definitive, elective operation for prostatic disease. Thirty-eight per cent of all the cancers found in their investigation were diagnosed only by the arbitrary use of open perineal prostatic biopsy in each case. Furthermore, four of the eight cases in their series that were suitable for radical perineal prostatectomy were unsuspected prior to biopsy of the posterior prostate. Their method provides not only an accurate diagnostic tool, but also an unparalleled opportunity for immediate radical perineal prostatectomy. This type of radical excision yields 10 year cancer-free survivals in 28% of patients selected as "early cases."[10]

It is hoped that a series of unselected patients can be evaluated by routine hospital study and, in addition, by open perineal prostatic biopsy. When early prostatic carcinoma is discovered, radical surgery, namely, perineal or retropubic prostatoseminal vesiculectomy, is performed. A synopsis of the methods utilized and results obtained during the first 13 months of this investigation covering the period from March 1, 1951, to April 24, 1952, follows.

MATERIAL AND METHOD

The clinical material comes mainly from the Men's Shelter, which is operated by New York City's Department of Welfare as an overnight sanctuary for impoverished men. The rapid turnover at that institution permits appraisal of large numbers of persons in the older age groups. The patients are collectively designated in this paper as the Bowery series.

The inpatient evaluation in each instance includes general and urologic history, a physical examination, a chest roentgenogram, excretory urogram, complete skeletal survey for osseous metastases on the faintest suspicion of such lesions, cystoscopy, retrograde pyelography when the intravenous urogram required elucidation, and electrocardiogram. Laboratory study includes urinalysis, bacteriological culture of voided and of catheterized residual urine, two hour phenolsulfonphthalein renal function test, a blood cell count, tests for blood nonprotein nitrogen, chlorides, carbon dioxide combining power, total protein, sugar, acid and alkaline phosphatase, and a serologic test for syphilis. A preliminary diagnosis is recorded before cystoscopy. During cystoscopy, palpation of the prostate per rectum is done by several staff members. The final clinical diagnosis is then written into the record.

The next phase of the study is open perineal biopsy of each prostate gland. The technique of perineal prostatic biopsy employed is essentially that described by Young[11] and modified by Belt.[12] Immediately after the biopsy specimen is removed, the surgical wound is packed with saline-moistened gauze. The patient is left in exaggerated lithotomy position on the operating table while

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The personnel of the New York City Department of Welfare, particularly Mr. Auram B. Zanft and Mr. Rubin Blum, assisted in this study.

Because of space limitations, the bibliographic references have been omitted from THE JOURNAL and will appear in the authors' reprints.

the frozen sections of the material are studied by the pathologist and the urologist. The biopsy specimen is longitudinally divided; one portion is used for immediate frozen sectioning, and the other half is preserved in Bouin's solution for permanent sectioning and staining. Of the frozen sections, several taken from different levels of the specimen are examined before any histopathological diagnosis is made. If no cancer is found, the wound is closed unless there is clinical indication for surgery designed to relieve obstruction caused by benign prostatic enlargement. Immediate radical perineal prostatectomy is performed when a frozen section diagosis of prostatic cancer is made.

Bilateral orchiectomy is performed at the same time as the radical prostatectomy. Oral diethylstilbestrol therapy, 500 mg. daily, is begun on the first postoperative day and continued indefinitely. The rationale for the combined therapy and choice of high dosage has recently been delineated.[12] In an effort to combine simplicity of anesthesia with rapidity in performing the perineal dissection, local pudendal nerve block is often utilized for the biopsy.[13]

In order to achieve objectively valid and accurately comparable arrangement of the data obtained, a classification of prostatic adenocarcinoma has been devised.[14] Five groups of prostatic cancer are considered, as follows: lesions limited to the gland (group 1); lesions encroaching on the prostatic capsule (group 2); lesions extending into but limited within the fascia of the seminal vesicles (group 3); lesions invading perineal spaces with extraprostatic extension (group 4); and lesions with distant metastases (group 5). Groups 1 to 3 were considered suitable for prostatoseminal vesiculectomy, whereas the latter groups (4, 5) are believed to be unsuitable for curative surgical treatments.

The first 100 surgical cases in the Bowery series are selected at random from 1,657 men on whom rectal palpation of the prostate was done and of whom cursory histories were taken (table 1). Ages ranged from 38

TABLE 1.—*Age, Race, and Symptomatology in Prostatic Pathological Conditions, 100 Cases*

Benign			Malignant		
Age, Yr.	No. of Cases	No. with Symptoms	Age, Yr.	No. of Cases	No. with Symptoms
31-40	2	0	31-40	0	0
41-50	22 (1 N)*	3	41-50	2	1
51-60	25	7	51-60	8	4
61-70	28 (2 N)	14	61-70	7	3
71-80	4	2	71-80	1	1
Over 80	1	1	Over 80	0	0
Total	82	27	Total	18	9

* N = Negro.

to 83 years in those without cancer, and from 47 to 76 years in those with malignant tumors. Only 3 Negroes, all found to have benign prostatic tissue, are found in these first 100 Bowery cases. Most of the patients are in the fifth to the eighth decades in both groups. The 97 white men were both native American and of foreign extraction; most were of Irish, Italian, and Polish origin. No patient had sought medical attention spontaneously. Thus, "symptoms" were elicited by history and consist, at the least, of acquired nocturia twice nightly or more. Symptoms vary in duration from 1 month to 7 years in the benign group, and from 3 months to 10 years in the malignant group. Only the oldest patient (age 76 years) in the group with malignancies had had symptoms for 10 years. The majority of men with urinary symptoms in both groups have had such difficulties for less than four years. One-third of the benign group described urinary symptoms. One-half of the patients with malignant growths have urinary symptoms; but, in so small a series, this difference is without significance.

The preoperative impressions from the use of the aforementioned clinical methods only present an interesting comparison with the diagnoses made from the microscopic findings of the excised specimens (table 2).

TABLE 2.—*Accuracy of Clinical Diagnosis, 100 Patients*

	Final Pathological Diagnosis	
Preoperative Clinical Diagnosis	Benign	Malignant
Benign (77)	66	11
Malignant (23)	16	7
Total (100)	82	18

It is apparent that there were 16 false clinical impressions of prostatic cancer. In addition, there were 11 falsely negative clinical diagnoses, i. e., microscopic examination proved the diagnosis to be prostatic carcinoma. Thus, of the 18 malignant growths discovered in this Bowery series, only 7 (39%) were correctly diagnosed clinically prior to biopsy. Combined errors, in both the benign and malignant groups, numbered 27; therefore, the clinical accuracy in diagnosing the kind of prostatic tissue was 73%. The most striking feature of this analysis of clinical diagnostic accuracy is that 61% of the microscopically discovered malignant prostatic growths were not recognized prior to biopsy.

Of the 18 prostatic cancers, 14 were diagnosed by frozen section examination of the perineal prostatic biopsy specimen. Two of the other four cancers were discovered either in the originally frozen half of the specimen or in the unfrozen half, when both portions were studied from paraffin block slices. The remaining two prostatic cancers were identified in a transurethral curetting and within an enucleated hyperplastic nodule, respectively. It is then clear, then, that the diagnosis of prostatic cancer was promptly made by frozen section technique in 78% of the 18 cases uncovered by this survey. Frozen and permanent preparations of the perineal prostatic biopsies together accounted for 89% (16 cases) of the positive diagnoses of malignancy. In 11%, the perineal prostatic biopsy was of no value in establishing the correct diagnosis of malignancy.

By comparing the accuracy of early cancer diagnosis by rectal palpation (37%) with that of microscopic study of the perineal prostatic biopsy (89%), it is obvious that the latter method is more than twice as dependable. Eleven of the 18 early cancers discovered in these 100 patients fell into group 1, five into group 2, and two into group 3, according to the classification previously described.[15] All 18 were subjected to radical prostatectomy. When surgical removal of the prostate is necessary to

relieve obstruction of the urinary tract in the absence of carcinoma, perineal, transurethral, retropubic, and suprapubic operations have been used. Usually, this surgery immediately follows the diagnosis made by frozen section study of the tissue obtained in open perineal biopsy.

There is no consistent correlation that can be made between the degree of prostatic induration detected by rectal palpation and the microscopic findings within the biopsy specimen. First, there is variance between the degree of induration estimated by different examiners. Therefore, in the present series, a consensus from three or more examiners is used for the final clinical (prebiopsy) diagnosis. Secondly, the cellular formation seen microscopically (large, medium, or small gland hyperplasia, or malignancy) bears little relationship to the degree or extent of induration determined clinically. Finally, although good agreement can be reached between examiners in the presence of extensive prostatic cancer, no such unanimity prevails as to whether or not a given gland in this series harbors a malignant growth—despite an overall clinically correct diagnostic record of 73%, and despite a high index of suspicion for prostatic cancer in this institution.

COMMENT

The biological potential of any particular carcinoma of the prostate gland cannot be determined.[15] However, the logical course for the urologist at present is early diagnosis and immediate extirpation of all malignant neoplasms of the prostate discovered. One purpose of this series is to identify prostatic carcinoma as early as possible.

From the results in the first 100 cases in the Bowery series, it appears prominently that ordinary clinical evaluation is quite inadequate for the detection of early prostatic cancer. The patient's medical history is totally worthless as a stimulus to suspicion that early carcinoma exists. Fortuitously encountered malignant neoplasms, located in the enucleated hyperplastic prostate, may represent extension from the posterior lamella in which most prostatic cancers have their sites of origin.[16]

The diagnosis of early prostatic cancer must then, in almost every case, be made through examination of the posterior prostate. The simplest method of appraising the posterior prostate is rectal palpation. This method alone, in the experience reported here, was of value in suspecting only 39% of the lesions ultimately proved by histopathological diagnosis to be malignant tumors. It may then be concluded that the vast majority of early prostatic malignancies disclosed by tissue diagnosis are not suspected on a basis of rectal palpation findings. In other words, induration of the prostate gland in early prostatic cancer is perhaps the exception and not the rule. In view of these findings, it seems likely that induration of the prostate gland as a result of malignant tumor is a late rather than an early sign of the disease, a sign that in many instances may not develop at all.

The simpler methods for evaluation of the posterior prostate on a tissue diagnostic basis include the punch,[17] needle,[18] and transurethral resection [19] types of biopsy. All of these methods fall short of the anticipated percentage of cancers. Open surgical biopsy of the posterior prostatic lamella, however, yields a number of unsuspected cancers comparable to that found in postmortem studies.[20]

The dependability of frozen section techniques in diagnosing prostatic cancer [21] is demonstrated by the fact that more than four-fifths of the cancers in the Bowery series have been definitely diagnosed by this method. For the prompt establishment of a definite diagnosis of prostatic cancer, the open perineal surgical biopsy appears to be the most reliable of the several methods cited. The opportunity to proceed with immediate curative surgery on a Frozen Section diagnosis of cancer adds value to the choice of open biopsy.

Contrary to the discouraging comments of Park and Lees regarding the ineffectiveness of curative surgical therapy for female mammary carcinoma,[22] the cancer-free survival rates of prostatovesiculectomy for prostatic carcinoma are heartening, even in elderly patients. A 10 year cancer-free survival is the criterion for success following prostatic cancer surgery. Since the diagnosis of prostatic cancer in the Bowery series has been made in every instance by arbitrary open surgical biopsy, it is likely that this entire group of cancers has been detected at an earlier stage in their natural history of development than those reported by Jewett,[10] which were treated by prostatovesiculectomy following rectal palpation diagnosis of carcinoma. It therefore seems reasonable to hope that the ten year survival figure for the Bowery series will exceed the 28% reported by the Johns Hopkins group.[10]

Although the Bowery series consists of patients drawn from a lower economic level of society, this factor could have little, if any, bearing on the incidence of prostatic carcinoma. Moore states that habitat, personal habits, and sexual activity of the patient do not affect the probability of prostatic malignancy.[16a] Of statistical importance in the Bowery series is the random selection of patients. In addition, the average age of patients in this series is considerably less than that usually cited in reported studies on prostatic cancer. It seems probable that pathologists and urologists in other institutions will detect a percentage of operable malignant tumors approximately equal to that reported here if open surgical biopsy of the posterior prostate is included in the evaluation of patients having prostatic enlargements requiring surgical treatment.

SUMMARY

One hundred open surgical perineal prostatic biopsies were performed on men from 38 to 83 years of age, none of whom had voluntarily sought medical advice for prostatic disease. Eighteen cases of unsuspected cancer of the prostate were thus discovered and treated by total prostatovesiculectomy and hormonal control methods. Thirty-nine per cent of these 18 cancers had begun to extend beyond the site of parenchymal origin and were classified in groups 2 and 3.

All of these 18 prostatic cancers were regarded as curable by "radical prostatectomy," although 2 fell within a histopathological classification of the furthest extension

of the tumor before inoperable status was attained (group 3). Usual clinical methods detected only 7 of these adenocarcinomas; microscopic study of the biopsy specimen identified 16 (89%) of these malignant tumors. Wider clinical utilization of open perineal surgical biopsy of the posterior prostate in patients undergoing elective prostatic surgery will increase the numbers of prostatic carcinomas detected at an operable stage of the disease.

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RISK OF PARALYTIC AND NONPARALYTIC FORMS OF POLIOMYELITIS TO HOUSEHOLD CONTACTS

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and
Morris Greenberg, M.D., New York

In the course of a recent study of multiple cases of poliomyelitis in the household,[1] a relationship was noted between the clinical type of poliomyelitis in the first and subsequent cases. This relationship was suggestive of a difference in the risk of paralytic and nonparalytic forms of the disease to household contacts. No reports have been found of adequate clinical data bearing on this relationship. The opportunity for collecting such data on a community-wide basis appeared in 1953, when nationwide tests were carried out on the value of gamma globulin in the protection of household contacts.[2] This opportunity was limited, however, by the use of gamma globulin that may have modified the conditions of household infection. In order to obtain the necessary information under natural circumstances, the data collected in New York City from 1949 to 1952 were reviewed.

The method used in collecting the data has already been described.[1a] The diagnosis of poliomyelitis was based on symptoms of acute onset with fever, stiffness of the neck or back, and increase in white blood cells in the spinal fluid, with or without paralysis. Every reported case was investigated by a diagnostician about a week after notification. About 20% of the reported nonparalytic cases were excluded from the study because of failure to meet the minimum criteria listed above.

In this report, the data considered are, first, the frequency of the clinical types of initial and subsequent infections in families with multiple cases and, second, the incidence of such infection among household contacts. The clinical types of multiple household infection were studied in 167 families during a four year period of investigation. There were 158 families with two cases, 7 with three, and 2 with four cases, or a total of 167 initial and 178 subsequent cases. The terms initial and subsequent rather than primary and secondary are used, because the source was unknown and simultaneous infection or infections from a subclinical carrier were suspected in most instances.

TYPE

The types of illnesses reported for initial and subsequent cases are summarized below:

	Initial Cases		Subsequent Cases	
Clinical Type	No.	%	No.	%
Nonparalytic	49	29.3	77	43.3
Spinal paralytic	82	49.1	71	39.8
Bulbar paralytic	36	21.6	30	16.9
Total	167	100.0	178	100.0

A greater percentage of nonparalytic cases occurred among subsequent cases. This was related to the type of disease observed in the first cases in the family, as shown in the following table:

		Type of Subsequent Case Associated with Initial Case			
		Nonparalytic		Paralytic	
Type of Initial Case	Total	No.	%	No.	%
Nonparalytic	55	40	72.7	15	27.3
Paralytic	123	37	30.1	86	70.0
Total	178	77	43.2	101	56.7

When the initial case was nonparalytic, other cases in the same family were also nonparalytic in 73% of the instances. On the other hand, when the initial case was paralytic, the subsequent cases were also paralytic in 70% of the cases.

The clinical importance of the foregoing data was reflected in the case fatality among subsequent cases. Those associated with a nonparalytic initial case had no deaths in 55 subsequent cases in contrast to 17 deaths in 123 subsequent cases (13.8%) following an initial case that was paralytic. In other words, all of the fatalities among subsequent cases occurred in the latter group. Therefore, the prognosis of multiple clinical infections in the household had some relationship to the type of disease manifested in the first case. If it was paralytic, other cases in the family were more apt to be paralytic and to have a greater case fatality than if the original case was nonparalytic.

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1. (*a*) Siegel, M., and Greenberg, M.: Passive Immunization in Relation to Multiple Cases of Poliomyelitis in Household: Epidemiologic Aspects in New York City, 1949-1952, New England J. Med. **249**: 171 (July 30) 1953. (*b*) Siegel, M., and Greenberg, M.: Trend of Multiple Cases of Poliomyelitis in Household Units, Pub. Health Rep. **68**: 996 (Oct.) 1953.

2. Distribution and Use of Gamma Globulin: Statement Issued April 20, 1953, by Division of Medical Sciences of National Research Council, Pub. Health Rep. **68**: 660 (July) 1953. Plan for the Allocation of Gamma Globulin: Issued April 15, 1953, by Office of Defense Mobilization in Executive Office of President, ibid. **68**: 666 (July) 1953.

INCIDENCE

The data on incidence were currently available for the year 1949 only when New York City experienced its third largest epidemic.[3] A detailed epidemiological survey was made of every affected household. A total of 2,338 families in which 2,446 cases occurred was investigated. The number of cases reported per household and the number of households affected were as follows:

Incidence of Subsequent Cases in Household Contacts by Age of Contact and Clinical Type of Poliomyelitis

Age of Contact, Yr.	No. of Contacts Not Affected Initially	Contacts Affected Subsequently: No.	Contacts Affected Subsequently: Case Rate per 1,000	Clinical Type in Subsequent Case: Paralytic: No.	Paralytic: Case Rate per 1,000	Nonparalytic: No.	Nonparalytic: Case Rate per 1,000
Initial Case, Paralytic							
0- 4	848	27	31.8	14	16.5	13	15.3
5- 9	699	27	38.6	18	25.7	9	12.9
10-14	441	13	29.5	8	18.1	5	11.3
15-19	277	8	28.9	5	18.1	3	10.8
20-30	2,393	13	5.4	12	5.0	1	0.4
40 and over	1,374	0	0.0	0	0.0	0	0.0
Total	6,032	88	14.6	57	9.5	31	5.1
Initial Case, Nonparalytic							
0- 4	340	6	17.6	3	8.8	3	8.8
5- 9	259	9	34.7	4	15.4	5	19.3
10-14	219	4	18.3	1	4.6	3	13.7
15-19	135	1	7.4	1	7.4	0	0.0
20-39	889	0	0.0	0	0.0	0	0.0
40 and over	584	0	0.0	0	0.0	0	0.0
Total	2,426	20	8.2	9	3.7	11	4.5
Initial Case, Both Types							
0- 4	1,188	33	27.8	17	14.3	16	13.5
5- 9	958	36	37.6	22	23.0	14	14.6
10-14	660	17	25.7	9	13.6	8	12.1
15-19	412	9	21.9	6	14.6	3	7.3
20-39	3,282	13	4.0	12	3.7	1	0.3
40 and over	1,958	0	0.0	0	0.0	0	0.0
Total	8,458	108	12.8	66	7.8	42	5.0

Cases per Household	Households Affected: No.	Households Affected: %
1	2,235	95.6
2	98	4.2
3	5	0.2
Total	2,338	100.0

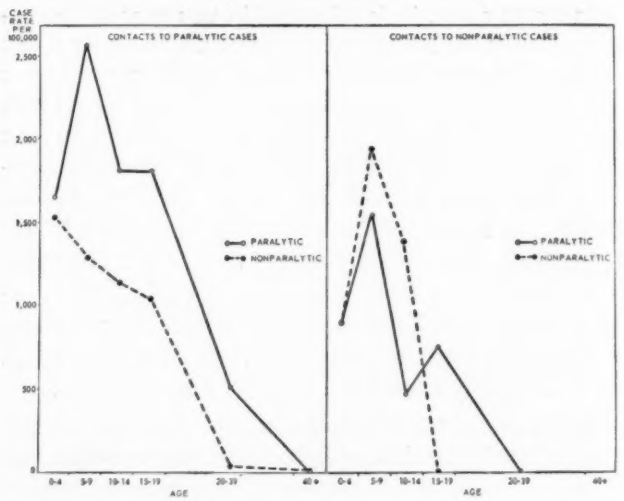
The frequency of households affected with multiple cases in 1949 was 4.4%. The age distribution of the household contacts in the 2,338 affected families was as follows:

Age, Yr.	No. of Persons Affected Initially	No. of Persons Not Affected Initially	Total No. of Persons
0- 4	686	1,188	1,874
5- 9	747	958	1,705
10-14	398	660	1,058
15-19	193	412	605
20-39	304	3,282	3,586
40 and over	10	1,958	1,968
Total	2,338	8,458	10,796

Of the 8,458 persons not affected intially, 6,032 were in households in which the initial case was paralytic and 2,426 in those in which it was nonparalytic. The age-specific incidence of subsequent cases in families with an initial paralytic case and those with an initial nonparalytic case is given in the figure.

The rate of multiple infections of household contacts was 1,278 per 100,000. This was about 40 times greater than the rate of 31 per 100,000 for the general population. It varied with the clinical type of disease in the initial case. Thus, the crude attack rate was 1,459 per 100,000 for contacts in homes with an initial paralytic case as against 824 per 100,000 where the initial case was nonparalytic, a difference of 77%. The probability that paralytic poliomyelitis would develop in a household contact was 945 per 100,000 if the initial case was also paralytic as against 371 per 100,000 if it was nonparalytic, a difference of 155%.

If the initial case was paralytic, the incidence of subsequent paralytic cases was higher in each age group of contacts than when the initial case was nonparalytic.



Age-specific incidence of subsequent cases of poliomyelitis in household contacts by clinical type of initial case in household.

There were no cases in persons over 39 years of age among the contacts when the initial case was paralytic, and two in those over 19 years of age when the initial case was nonparalytic.

According to the foregoing data, therefore, the chances that paralytic poliomyelitis would develop in household contacts appeared to be greater when the initial case was paralytic than when it was nonparalytic. Also, the age span of clinical infection was increased among household contacts to paralytic cases. The difference in age span of clinical infection was reflected in the age distribution of subsequent cases associated with initial paralytic and nonparalytic types, as summarized below for the period from 1949 to 1952, inclusive:

Age	Subsequent Cases in Households with Initial Paralytic Case: No.	Subsequent Cases in Households with Initial Paralytic Case: %	Subsequent Cases in Households with Initial Nonparalytic Case: No.	Subsequent Cases in Households with Initial Nonparalytic Case: %
0- 4	33	26.8	14	25.5
5- 9	42	34.1	21	38.1
10-14	17	13.8	15	27.3
15-19	11	9.0	3	5.5
20-39	20	16.3	2	3.6
40 and over	0	0.0	0	0.0
Total	123	100.0	55	100.0

3. Greenberg, M.; Siegel, M., and Magee, M. C.: Poliomyelitis in New York City, 1949, New York J. Med. **50**: 1119 (May 1) 1950.

Thus, 25.3% of the persons who had subsequent cases were 15 years and over when the initial case was paralytic as against 9.1% when it was nonparalytic. The age difference between the two groups with subsequent cases was most marked between 20 and 39 years of age; this represents the oldest susceptible age group and was consistent with the results shown in the figures.

SUMMARY AND CONCLUSIONS

This study on multiple cases of poliomyelitis in households in New York City reveals two relationships between the initial type of disease in the household and the outcome among household contacts. First, the probability that more than one case will develop in a family is greater when the initial case is paralytic than when it is nonparalytic and the age span of susceptibility is increased. Second, the prognosis of the subsequent cases that develop in the affected households is worse both for life and for paralysis if the initial case is paralytic.

The explanation of these results is speculative. The practical considerations seem fairly clear. First, the clinical type of disease that is first seen in a household is of some prognostic significance with respect to the occurrence of other cases, their clinical types, and case fatality. Second, the need for protection of contacts is greater if the initial case is paralytic than if it is nonparalytic.

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POSTERIOR RHIZOTOMY OF THE SECOND AND THIRD CERVICAL NERVES FOR OCCIPITAL PAIN

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The procedure of surgical section of the sensory roots of the second and third cervical nerves for a certain type of occipital pain and headache has been described by Hunter [1] and has been continued by Hunter and Mayfield [1] and others. The upper cervical area is susceptible to injury and consequent severe symptoms, particularly pain, as described by Abbott and Gay,[2] who called them "whiplash injuries of the neck." Occipital pain, often radiating to forward parts of the head, has long been known to be associated with anomalies of bone and soft tissue about the junction of spine and skull. Pain emanating from this area is fairly common and difficult to treat. It often appears to be of such an agonizing, irritating nature as to make the patient highly nervous and even occasionally suicidal; the label of psychoneurosis is sometimes affixed to such a patient.

Conservative treatment has been ingenious but often of only temporary and partial benefit. An effort has therefore been made to set up criteria for selection of cases deserving of a surgical approach. Failure of medical, physical, and psychiatric treatment has generally been the first prerequisite. A history of injury or evidence of anomaly is helpful, though not necessary. The basis of selection is severe, intractable head pain, usually originating about, or severest in, the suboccipital area, aggravated by certain positions of the head, and worse with physical effort in the forward bending position. The transverse processes on one or both sides of the second and third cervical nerves are tender to deep pressure, which reproduces the pain pattern. Pressure downward on the head approximating it to the thorax, especially with the face turned to the affected side and the neck flexed forward, causes pain. Traction may decrease or increase it. The dermatomes of the second and third cervical nerves should show sensory change. Procaine (Novocaine) injection in the area of these nerves may relieve the pain; this is a welcome confirmation of the other signs. The needle and the pressure of the injected solution, however, may irritate the sore nerves so much as to render the effect indeterminate. A previous diagnosis of psychoneurosis should not prejudice the examiner. When these criteria have been satisfied and when other known causes of head pain have been ruled out, a laminectomy in the high cervical area has been performed, with intradural section of the sensory roots of the second and third cervical nerves.

In all, 35 patients have been so treated, with a follow-up since surgery of from three months to six and one-half years. Questionnaires were sent asking: 1. Has pain relief been complete? 2. If not, what percentage relief has been obtained? 3. If you had it to do over again, would you have the operation? Replies were received from 22 of the patients; 13 have not been heard from. Even though information was available that some of these 13 had had a good result, no case was included when a reply was not received from the patient. No result was listed as good unless the estimated improvement was 75% or better and the patient, in retrospect, said he would have the operation. For example, one patient said that although she had obtained only 50% relief, she would still make the decision for the operation; nevertheless, her case was included in the poor results. Of the 22 patients responding, 16 had results that were considered good, and of these, 10 reported complete relief. Of the six patients who had poor results, three reported some relief.

The manner of onset of pain appeared to have little similarity from case to case. In many, there was no history of head or neck injury. It was not unusual for the pain to have appeared first in supraorbital or maxillary areas. In all cases, however, suboccipital pain soon began to take precedence over that in other areas. In two cases there was radiation of pain into one shoulder or arm. (Both of these patients had a satisfactory result, one with complete relief of the shoulder pain as well as that in the suboccipital region.) One patient had demonstrable hypesthesia of the dermatome of the first division of the

From the Neuroclinic.

1. Hunter, C. R., and Mayfield, F. H.: Role of Upper Cervical Roots in Production of Pain in Head, Am. J. Surg. 78: 743 (Nov.) 1949.

2. Gay, J. R., and Abbott, K. H.: Common Whiplash Injuries of Neck, J. A. M. A. 152: 1698 (Aug. 29) 1953.

trigeminal nerve on the affected side. As many patients had bilateral as unilateral pain. Almost all patients were emotionally upset by the pain to the extent of appearing psychoneurotic. The following report is of a typical case with successful result.

REPORT OF CASES

CASE 1.—A 44-year-old woman had been suffering from disabling left occipital head pain for seven years. There was no history of injury. The pain had begun insidiously and had become increasingly severe as the years passed. The patient had shown such pronounced symptoms of nervousness and severe mood changes that she had been given insulin shock and electric shock and had undergone pneumoencephalography. Occipital nerve block had given only temporary relief. Examination showed sensory changes over the dermatomes of the second and third cervical nerves on the left, tenderness over the transverse processes of the second and third cervical nerves, and pain of the same distribution as the headache on compression of the head on the neck. The pain never radiated forward. After rhizotomy, there was immediate relief. Eighteen months later the patient reported 80% relief of pain, with residual soreness and stiffness of the neck only. She is grateful for the operation and would undergo it again in similar circumstances.

Many kinds of therapy had been tried unsuccessfully in these cases before rhizotomy was undertaken, including nerve block, mephenesin (Tolserol), physiotherapy of many sorts, operations of other types, and psychotherapy. The duration of the pain prior to surgery was from seven weeks to 10 years, averaging about 5 years. In only four cases, in which pain was unbearable, was treatment undertaken less than a year after the onset of pain. (In three of these a good result was obtained.)

At operation, anomalies of the high cervical area were unveiled beyond all expectation; some had not been revealed by x-ray, or at least they had not been noticed. Four platybasias, two partial atlanto-occipital fusions, one partial atlanto-axial fusion, and a fracture of the atlas with lateral displacement were found. In all of these patients but one, who had platybasia, the results were good. Since these eight cases constitute more than one-third of those studied, more careful search for organic disturbances in this region seems indicated. When the operation was successful, relief was usually immediate but was delayed in a few cases for several days to two weeks. It was presupposed that the unsuccessful cases would be constituted of the severe psychoneurotics; on study, no such comforting conclusion could be reached. It is well known that pain of sufficient severity often creates its own tension and depression of mood, and that appeared to be the circumstance here. Incomplete or missed diagnosis accounted for three of the six failures, as described below.

CASE 2.—A 35-year-old man complained of severe, continuous left suboccipital pain of nine years' duration. In addition, there were paroxysms of pain deep inside the ear and into the throat. In retrospect, the ear and throat were probably the source of the most severe pain. Rhizotomy failed completely to give relief, and three years after surgery this patient was still suffering, now frankly from his painful paroxysms.

This case illustrates one of the pitfalls of diagnosis in this condition. Whenever the patient is suffering severely enough, his neck muscles are likely to become tense, and occipital headache will result; this "tension headache" may become his chief concern. Such tension pain, however, may be eased by rest, heat, massage, and antispasmodics. It should be considered in every case before surgery is offered.

CASE 3.—A 27-year-old woman complained of severe frontal headache of two years' duration that started after a "virus infection." Occipital pain of later onset became the principal complaint. Physical therapy and occipital nerve blocking failed to give permanent relief. Rhizotomy was undertaken with only 50% relief two months after surgery. At the patient's last examination, however, a generalized lymphadenopathy had developed, and the pain had spread to other parts of her body.

It appears that this patient was suffering from some generalized disease, the possibility of which was not at first recognized. Among the chronic diseases that may be manifested first by occipital pain are mononucleosis, syphilis, and brucellosis. These can be very difficult to detect.

CASE 4.—A 49-year-old woman had occipital pain only, of 12 years' duration. She seemed psychoneurotic and complained of many other discomforts throughout the body. Histamine desensitization and other conservative measures gave no relief. When burr holes were made for a ventriculogram (which was never carried out), the operator described what appeared to be a vascular tumor directly underneath one burr hole. This was overlooked or minimized, and rhizotomy was performed. Thirteen months after the operation, the patient still had occipital pain.

Of the three remaining patients who were therapeutic failures, one had the roots cut only on one side, which may have been insufficient. While so-called psychoneurosis did not seem to be a factor in failure, drug addiction may have been in the last two cases. One of these patients had had pain for 4 years and the other for 10 years. Also, one of them had had pain radiating to the temporomandibular joint; the pain may have had its origin in a disease of that joint.

COMMENT

Responsibility for obtaining a good result from high cervical rhizotomy must rest with the doctor and not with the patient. A few errors arising from enthusiasm for a new and highly successful method of treating pain, or an occasional diagnosis clouded by the confusion of an emotionally disturbed patient, are understandable. If these errors are not counted, the operation failed in only one case. Those residual symptoms that did occur in successful cases consisted mostly of soreness and stiffness of the neck.

SUMMARY

High cervical sensory rhizotomy proved to be a very successful method of controlling a certain type of occipital pain. A psychoneurotic attitude, after years of pain, on the part of the patient, is not a valid deterrent to surgery; drug addiction is. Differential diagnosis is difficult, and errors in proper evaluation account for most of the failures in the cases presented.

133 Doctors Building (3).

Vitamin A Intoxication.—The diagnosis of hypervitaminosis A can be made readily if the syndrome is kept in mind and if a careful history of vitamin intake is routinely taken. The essential clinical features are pruritus, cheilosis, hyperirritability, and swellings of forearms and feet. The roentgenographic changes resemble those of infantile cortical hyperostosis, from which it must be differentiated. Thus far, vitamin A intoxication has not been reported to involve the mandible, which is usually reported in infantile cortical hyperostosis. Vitamin A intoxication is rarely seen before the age of 18 months, whereas the diagnosis of infantile cortical hyperostosis can usually be made before the age of six months.—M. T. Harrison, M.D., and R. D. Mercer, M.D., Vitamin A Intoxication, *Cleveland Clinic Quarterly*, October, 1953.

CLINICAL NOTES

TYPHUS FEVER (BRILL'S DISEASE) COMPLICATED BY DIABETES INSIPIDUS

REPORT OF A CASE

Clarence E. Rupe, M.D.
Howard R. Marvel, M.D., Detroit
Robert J. Ryan, M.D., Chicago
and
Edward L. Quinn, M.D., Detroit

Typhus fever (Brill's disease) has been reported only sporadically from areas other than the coastal region of the northeastern United States. As suggested by Brill [1] and Zinsser [2] and established by Murray,[3] cases of recrudescent epidemic typhus would be expected to occur in all localities to which persons from foci in the Old World have migrated. To our knowledge, this is the first case of typhus fever reported from the Middle West despite the presence in this region of a large population of eastern European origin. This patient also showed unusual features including a transient diabetes insipidus.

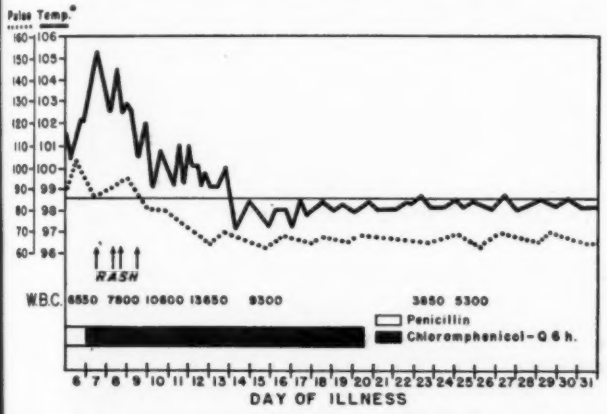

Fig. 1.—The clinical course of patient in case reported on. The pulse rate and the temperature in degrees Fahrenheit are shown in the upper left part of the figure. The white blood cell count and the administration of drugs are shown in the lower half. Chloramphenicol was administered every six hours.

A 51-year-old white male machinist was brought to the Henry Ford Hospital by his family on April 18, 1953. Five days prior to admission there was sudden onset of chills, fever, sweating, malaise, muscular aching, and a nonproductive cough. He was given penicillin by his family doctor for three successive days without benefit. Twelve hours before admission the patient complained of severe headache and became delirious.

The patient was born in Turkey in 1895 and lived there until 1914, when he moved to Argentina. In 1916 he came to Detroit and has lived there since. He had not traveled outside Michigan in recent years. There were no household pets. No members of the family or visitors had been ill nor were there body lice, fleas, or ticks known to be present. At the age of 14, while in Turkey, the patient suffered an acute febrile illness characterized by chills, fever, and headache. Typhus fever was diagnosed. A cousin afflicted at the same time died of the illness.

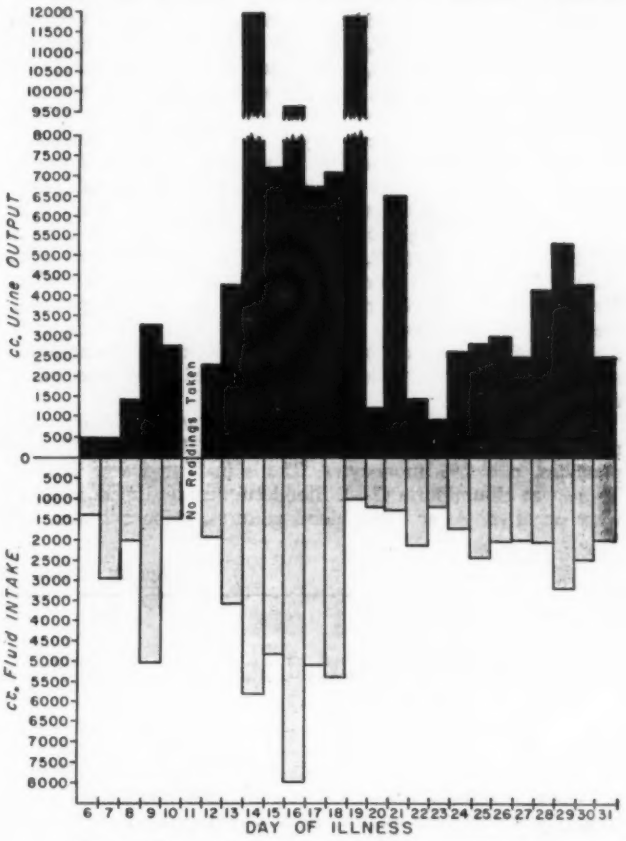

Fig. 2.—Water balance of patient in case reported on.

The patient was first seen in this hospital in 1937 with chills, fever, and malaise but without headache or rash. The clinical diagnosis was influenza. Recovery was prompt and complete.

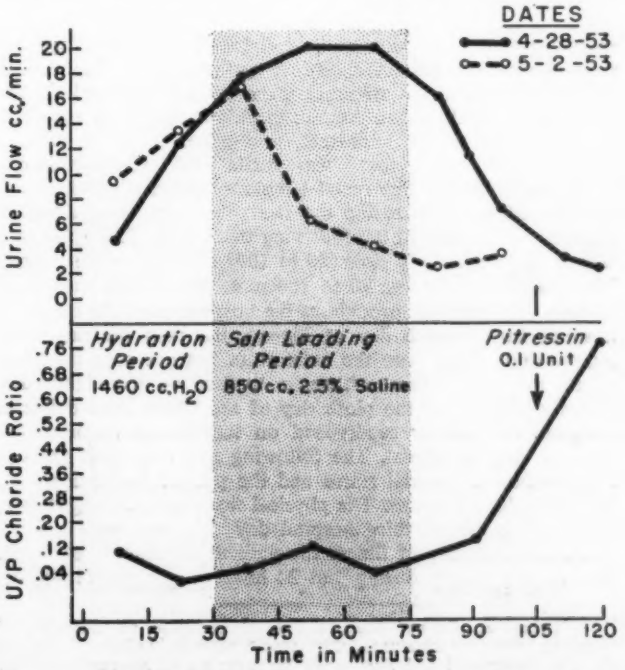

Fig. 3.—Results of Hickey-Hare tests in patient in case reported on. Vasopressin injection (Pitressin) was administered at 105 minutes. The ratio of urinary chloride concentration to plasma chloride concentration (U/P chloride ratio) is shown in the lower half of the illustration.

From the Department of Medicine, Henry Ford Hospital. Dr. Ryan is now at the University of Illinois College of Medicine, Chicago.

1. Brill, N. E.: An Acute Infectious Disease of Unknown Origin: Study of 221 Cases, Am. J. M. Sc. **139**: 484, 1910.
2. Zinsser, H.: Varities of Typhus Virus and the Epidemiology of the American Form of European Typhus Fever (Brill's Disease), Am. J. Hyg. **20**: 513, 1934.
3. Murray, E. S., and Snyder, J. C.: Brill's Disease: II. Etiology, Am. J. Hyg. **53**: 22, 1951.

He was next seen in 1945, with chronic abdominal distress diagnosed as irritability of the colon. On both occasions splenomegaly was noted. In view of later developments, it is of interest that the patient's fluid intake and output and the specific gravity of the urine were within normal limits at that time.

Physical examination on admission showed a well-developed, well-nourished, acutely ill, delirious white male. The temperature was 102.6 F (rectal), pulse rate 80, respirations 32, and blood pressure 96/64 mm. Hg. The skin was hot, dry, and free of eruption except for herpetic lesions on the lips. There was no lymphadenopathy. The pharynx was moderately congested and there was a single petechial hemorrhage on the soft palate. The neck was supple. The thyroid gland was not enlarged. Dulness to percussion, decreased breath sounds, and medium rales were noted at the right base posteriorly. The area of cardiac dulness was not increased, and the heart sounds were of good quality. No murmurs were heard. The abdomen was slightly distended but otherwise normal. The spleen was palpable at the costal margin. Rectal examination showed moderate, symmetrical enlargement of the prostate. Neurological examination showed only that the patient was disoriented as to time, place, and person.

On admission the white blood cell count was 6,050 per cubic millimeter with 81% polymorphonuclear leukocytes, 17% lymphocytes, and 2% monocytes. The spinal fluid was normal. There was albuminuria (2+). Blood cultures and urine cultures were negative. After three blood cultures, urine cultures, and sputum cultures were obtained, administration of penicillin and streptomycin intramuscularly was begun (fig. 1). On the second hospital day (sixth day of illness), the patient remained febrile and delirious and a faint, discrete maculopapular rash appeared on the trunk, thighs, shoulders, and upper arms. A clinical diagnosis of typhus fever was made and chloramphenicol therapy was begun. The rectal temperatures remained between 102 F and 105.8 F during the next 48 hours, then dropped gradually to normal in the following three days. The pulse rate was disproportionately slow (80 to 100) throughout the course. The blood pressure was 90 to 100 mm. Hg systolic and 60 to 70 mm. Hg diastolic throughout the hospital stay. On the third hospital day (seventh day of illness), the rash became more intense and spread onto the extremities but not onto the face, palms, and soles. The rash began to fade on the eighth day and disappeared on the ninth day of the illness. The delirium persisted and stupor supervened on the second hospital day (seventh day of illness). The following day there was marked improvement in mental status and the patient was rational on the ninth day of illness. The physical findings at the right lung base cleared on the third hospital day.

On the 13th day of illness the patient complained of thirst. The urinary output during that 24 hour period was 11,900 cc. (fig. 2). The output had been 1,300 to 4,500 cc. per 24 hours in the preceding few days. The water balance was normal after a few days and remained so. The Hickey-Hare [4] test was carried out on April 28, 1953, and May 1, 1953, because of the diabetes-insipidus-like picture and was equivocally positive on the first occasion and negative on the second (fig. 3). A DeTakats water balance test [5] showed a normal water tolerance on May 3, 1953. Urea clearance on April 27, 1953, was 46 cc. and 43 cc. standard clearance.

An electroencephalogram on May 4, 1953, showed paroxysmal bursts of four to six per second, high voltage, irregular activity in the temporal leads most prominent in the left temporal region. These findings were interpreted as indicative of a unilateral organic disturbance in the temporal lobe or a deep midline lesion. A neurological examination gave normal results, and the eyegrounds and the visual fields were normal. A repeat electroencephalogram on Sept. 26, 1953, was essentially unchanged. An electrocardiogram, done because of the patient's weakness and mild substernal distress during convalescence, was within normal limits.

The white blood cell count varied from 6,050 per cubic millimeter on admission to 13,600 per cubic millimeter on the sixth hospital day. The count fell to 3,850 on the 18th hospital day. The differential blood cell count showed normal results on admission. The platelets appeared decreased in the blood smears on admission, but subsequent platelet counts were normal. The hemoglobin was 13 grams per 100 cc. on the patient's admission and then fell to 10.8 grams per 100 cc. The reticulocyte count was 2.8%. The red blood cell count was 4,200,000 per cubic millimeter on admission, and on the stained smear the cells were normocytic, but they were macrocytic in appearance on the sixth hospital day. Bone marrow aspiration on the second hospital day showed a myeloid-erythroid ratio of 11 to 1 with hypocellularity, toxic neutrophils, depression of normoblasts, increased numbers of histiocytes with many azurophilic granules and vacuoles, and marked decrease in megakaryoblasts and megakaryocytes.

Urinalysis showed albuminuria (2+), coarse granular casts, and a specific gravity of 1.028 on admission. The specific gravity fell to 1.002 and then regained normal levels in the next few days. The blood nonprotein nitrogen value was normal on admission and remained so throughout the hospital stay. Weil-Felix agglutinations, complement fixation with epidemic typhus and murine typhus antigen,[6] heterophil agglutination, cold agglutination, Weil's agglutination, and Widal and Brucella abortus agglutinations were done during the illness and convalescence (see table). The patient was discharged on the 27th hospital day. Convalescence was marked by asthenia. He returned to work two months after the onset of illness.

Serologic Tests in Patient Reported On

	Day of Illness							
	7	8	10	14	15	19	21	29
Epidemic typhus complement-fixation	1:640	.....	.....	.....	...	1:2560*	.....	1:2560*
Murine typhus complement-fixation	1:20	.....	.....	.....	...	1:640	.....	1:640
Weil-Felix agglutination								
OX 2	Neg.	.....	.....	Neg.	...	Neg.	Neg.	.....
OX K	Neg.	.....	.....	1:80	...	1:160	1:320	.....
OX 19	1:20	.....	.....	Neg.	...	Neg.	1:80	.....
Heterophil agglutination								
Unabsorbed	.....	.....	1:112	1:112	...	1:112	1:112	.....
Absorbed (guinea pig kidney)	.....	.....	Neg.	Neg.	...	Neg.	.....	.....
Cold agglutination	1:8	.....	.....	.....	1:8	1:8	1:16	.....
Widal	Neg.	.....	.....	Neg.	...	.....	.....	.....
Brucella abortus agglutination	Neg.	.....	.....	Neg.	...	.....	.....	.....
Weil's agglutination	.....	Neg.	.....	.....	...	.....	.....	.....

* No end point.

COMMENT

Brill's disease, which is now thought to represent recrudescent epidemic typhus fever, was first described in 1898 and 1910 by Nathan Brill as an acute infectious disease of unknown origin. Clinician that he was, Brill recognized that the disease most resembled typhus fever. He

4. Hickey, R. C., and Hare, K.: Renal Excretion of Chloride and Water in Diabetes Insipidus, J. Clin. Invest. **23**: 768, 1944.

5. DeTakats, G., and Fowler, E. F.: The Water Tolerance and the Hypertensive Patient: Its Relation to Operability, Am. Heart J. **38**: 234, 1949.

6. These tests were performed through the courtesy of Dr. Theodore Woodward in the Section of Infectious Diseases, University of Maryland.

even went so far as to hint that patients with this disease might serve as foci of typhus epidemics.

During the next three decades the causative agents of Old World and murine typhus were differentiated. These developments enabled Zinsser and Castaneda,[7] in 1933, to isolate three strains of typhus rickettsiae from patients with typhus fever, which biologically resembled R. prowazekii, the cause of Old World (epidemic) typhus and which were unlike R. mooseri, the murine typhus causative agent. On epidemiological grounds, Zinsser [2] hypothesized that the disease must be a recrudescence of a previous epidemic typhus infection that becomes active under circumstances of fading immunity. In 1943, Plotz [8] added further weight to Zinsser's hypothesis by findings with the specific complement-fixation test. Murray, in 1950,[3] was able to isolate seven strains of R. prowazeki from seven early cases of typhus fever by the louse feeding technique. In 1951, Murray and others [9] were able to demonstrate 26 cases of Brill's disease in an epidemic area of Old World typhus during an interepidemic period and thus were able to add support to Brill's and Zinsser's impressions that the disease might serve as a foci of epidemics. They also concluded that the disease might be expected wherever previous Old World typhus patients immigrated.

The clinical data of recrudescent epidemic typhus has been well delineated by Brill,[1] Zinsser,[2] and Murray.[10] Both sexes are affected about equally. The great majority of patients are those who immigrated from typhus areas of Europe and have resided in this country from 1 to 50 years, with an average of about 20 to 40 years, before the onset of their illness.

Our patient presented the classical clinical picture of Brill's disease: fever, severe headache, delirium, and a macular rash on the trunk in an emigrant from Turkey who had lived in America for 37 years. The diagnosis might be expected more frequently if a high index of suspicion is maintained in areas other than the northeastern coastal cities. Confirmation of the diagnosis rests mainly on serologic techniques, since direct recovery of R. prowazekii is impractical for the average laboratory. The reliability of the Weil-Felix agglutination with the Proteus group of organisms has been questioned.[11] Felix[12] feels that standardization of the technique would improve reliability. It would appear that the diagnosis of typhus fever should not be excluded by negative Proteus agglutinations or by atypical patterns of OX 2, OX K, and OX 19 agglutinations. In Murray's cases [9] only 3 of 14 patients had Weil-Felix agglutination titers that aided the diagnosis.

Specific complement-fixation tests on this patient's serum gave results consistent with typhus fever, and the higher titers observed with the epidemic typhus antigen support Zinsser's hypothesis that typhus fever is representative of the epidemic type. Thus, the use of the diagnostic criteria suggested by Murray,[13] i. e., fever, headache, and macular or maculopapular rash on the fourth or sixth day of the illness occurring in a foreign-born person who had lived previously in an epidemic typhus fever area, as well as reliance on the specific complement-fixation test rather than the Weil-Felix reaction, should result in recognition of more cases of typhus fever. The significance of the heterophil agglutination in this case is now known. The agglutinin was absorbed by guinea pig kidney antigen. No serum had been administered.

The temporary diabetes-insipidus-like picture in this patient and electroencephalographic abnormality suggests hypothalamic or posterior pituitary involvement perhaps due to petechial hemorrhages in this area. The diuresis (11,900 cc. in 24 hours) was much greater than that seen after febrile diseases. There was no preceeding oliguria or overhydration. The equivocally positive Hickey-Hare [4] test soon thereafter with prompt return toward normal is supporting evidence of transient disturbance of hypothalamic-posterior pituitary mechanism.

2799 W. Grand Blvd. (2) (Dr. Quinn).

7. Zinsser, H., and Ruiz Castaneda, M.: On the Isolation from a Case of Brill's Disease of a Typhus Strain Resembling the European Type, New England J. Med. **209**: 815, 1933.

8 Plotz, H.: Complement Fixation in Rickettsial Diseases, Science **97**: 20, 1943.

9. Murray, E. S., and others: Brill's Disease: IV. Study of 26 Cases in Yugoslavia, Am. J. Pub. Health **41**: 1359, 1951.

10. Murray, E. S., and others: Brill's Disease: I. Clinical and Laboratory Diagnosis, J. A. M. A. **142**: 1059 (April 8) 1950.

11. Murray and others.[9] Murray and others.[10] Blatteis, S. R.: Endemic Typhus Fever (Brill's Disease): A Report of 138 Cases, M. Clin. North America **2**: 1099, 1928.

12. Felix, A.: Note on a Case of Brill's Disease in London, Lancet **2**: 99, 1950.

13. Murray, E. S., and others: Epidemic Typhus Antibodies in Human Subjects in Boston, Mass., New England J. Med. **246**: 355, 1952.

SJÖGREN'S SYNDROME

REVIEW OF LITERATURE AND REPORT OF A CASE

Francis E. Kenny, M.D.
and
James E. Long, M.D., Buffalo

Henrik Sjögren [1] has described a syndrome manifested by dryness of the mouth and conjunctival sac, which is caused by failure of the salivary and lacrimal glands to maintain adequate secretion. Since the original description, it has been pointed out by Sjögren and others [2] that this condition occurs most frequently in women who have passed the menopause. It has been noted also that dryness of the mucous membranes of the nose and pharynx and dryness and atrophy of the mucosa of the vagina are so frequently associated with this condition that they should be considered a part of the syndrome. To date almost all publications describing this syndrome have appeared in journals devoted to dermatology and ophthalmology. However, this condition is so protean in nature and so widespread in its symptomatology and manifestations

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Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. (*a*) Sjögren, H.: Zur Kenntnis der Keratoconjunctivitis sicca, Acta ophth., supp. 2, p. 1, 1933; (*b*) Zur Kenntnis der Keratoconjunctivitis sicca: allgemeine Symptomatologie and Ätiologie, ibid. **13**: 1, 1935.

2. (*a*) Sjögren, H.: Keratoconjunctivitis Sicca and Chronic Polyarthritis, Acta med. scandinav. **130**: 484, 1948. (*b*) Pearson, R. S. B.: Two Cases of Felty's Syndrome with Features of Sjögren's Syndrome, Proc. Roy. Soc. Med. **45**: 253 (May) 1952. (*c*) Touraine, A.: Xerodermosteosis (Gougerot-Houwer-Sjögren Syndrome), Presse méd. **58**: 405 (April 15) 1950.

that it creates a difficult diagnostic problem with which the internist may be confronted. For this reason we wish to report the following case.

REPORT OF CASE

A 50-year-old white woman first sought medical attention in January, 1952, because of the cracked and swollen condition of her lips, which had persisted for eight months. She complained also of persistent dryness of the mouth, which made chewing and swallowing very difficult. After she was questioned further, it was learned that she suffered also from burning and swelling of the eyelids, symptoms that were not relieved by either medication or refraction. There was frequent crusting of the mucous membrane of the nose. No anorexia, nausea or vomiting, diarrhea, or jaundice had been noted. She had no intolerance to fatty foods, and her diet had been varied and adequate. There were no symptoms that could be referred to either the cardiorespiratory or genitourinary systems. Menses had ceased approximately one year before the onset of the above symptoms.

Physical examination revealed a well-developed and well-nourished woman. There was slight puffiness of the eyelids and injection of the conjunctivas. The nasal mucosa was not abnormal. The lips were dry and swollen, and many fissures were present. Rhagades were noted around the mouth. The tongue and buccal mucosa appeared dry and red. The pharynx was dry. The parotid and lacrimal glands showed no abnormalities. The right lobe of the thyroid was enlarged. Minimal osteoarthritic changes were present in both knees. The skin appeared normal. No other abnormalities were noted. The basal metabolic rate was −15%. Because of these findings, the patient received large doses of mixed vitamins, desiccated thyroid given orally, and vitamin B_{12} administered intramuscularly. The patient's response to this therapy over a three-month period was unsatisfactory, and the patient was admitted to the Veterans Hospital in Buffalo on April 28, 1952.

The following information was obtained through laboratory study. The results of urinalysis showed a specific gravity of 1.025; acid reaction; and the absence of albumin, sugar, and acetone. Microscopic examination of the urine showed 3 to 5 white blood cells per high power field. The red blood cell count was 4,333,000; the hemoglobin level (Leitz Photoelectric Cell method) was 12 gm. per 100 cc., and the white blood cell count was 7,000. A differential review of the white blood cells showed 21 band cells, 47 filamented forms, 24 lymphocytes, 6 mononuclear leukocytes, 1 eosinophil, and 1 basophil. The sedimentation rate (Wintrobe) was 25 mm. per hour, the nonprotein nitrogen level 33 mg. per 100 cc., and the blood glucose level 87 mg. per 100 cc. There were 64 units of serum amylase (modified Somogyi). In the sulfobromophthalein (Bromsulphalein) test there was no dye retention after 45 minutes. The plasma prothrombin time was 15 seconds with a control time of 14 seconds. The results of a cephalin-cholesterol flocculation test of liver function were doubtful. The results of a guaiac test for occult blood in the stools were negative. Roentgen-ray study of the chest showed no abnormality, and similar studies of the gastrointestinal tract revealed no lesions. A gallbladder series showed a normally functioning gallbladder. The results of an electrocardiogram were within normal limits.

The consultant dermatologist and allergist both suggested the diagnosis of avitaminosis. The ophthalmologist made a diagnosis of blepharoconjunctivitis. Routine dental survey revealed an almost complete absence of salivary gland secretion. The patient was given pilocarpine in 2% solution, 5 drops three dimes daily, diethylstilbestrol 0.1 mg. given orally three times a day, and vitamin B_{12} given intramuscularly. Two days after the institution of this regimen, salivary secretion was again produced. The patient's symptoms were greatly relieved, and marked improvement was noted in the buccal mucosa, fissuring, and cheilosis. The patient was discharged from the hospital on May 6, 1952. When next seen on Dec. 6, 1952, the patient had taken no medicaments for three months. The dryness of the eyes, mouth, and throat had returned, and marked itching and swelling of the labia majora had developed. The consultant gynecologist attributed the latter change to the menopause. These vaginal symptoms improved with the local application of a cream containing estrogens. When last seen in June, 1953, the patient was taking sporadically a multivitamin preparation, diethylstilbestrol, and pilocarpine. There was some dryness of the conjunctiva and of the mouth and pharynx, but the patient was relatively free of symptoms.

COMMENT

Little is known about the etiology, pathogenesis, or pathology of this syndrome. The presence of an inherited factor in the etiology is emphasized by Lisch,[3] who reported 12 cases of Sjögren's syndrome in three generations of one family. Coverdale [4] reported two cases occurring in each of two different families. One of these families consisted of father and daughter; the occurrence in the father, since the condition is commoner in females, is most unusual. Touraine [2c] discusses infectious factors, sympathetic imbalance, and avitaminosis. Morgan [5] and others [6] cite the endocrine changes associated with the menopause as the primary cause. Ellman and Weber,[6a] having studied this condition and its response to x-ray therapy, suggest the possibility of its being a variant of Mikulicz's disease (achroacytosis). Ellman [7] later reported changes found when an autopsy was performed, consisting of chronic inflammatory changes and atrophy of the salivary, lacrimal, mucous, and sweat glands. Sjögren [2b] in one of his early publications makes very pertinent observations and comments as to etiology. He states that the mucous membrane lesions are only a part of a general disease that causes these patients to look ill and to appear older than their chronological age. These observations might be attributed to changes that occur in ectodermal tissue as a result of the general process of aging, particularly thinning and graying of the hair, dryness and loss of elasticity of the skin, and changes in the epithelium of the vagina. In as much as the lacrimal and salivary glands are also of ectodermal origin, we suggest that the changes in these glands occurring in Sjögren's syndrome are the same as those that occur in other tissues of ectodermal origin during aging. If this is true, it is reasonable to assume that the glandular changes of Sjögren's syndrome are part of a premature aging process.

The methods of treatment used in Sjögren's syndrome are as numerous as the multiplicity of authors describing the condition. Disagreement exists as to the effectiveness of various drugs that have been used, namely, corticotropin (ACTH), cortisone, vitamins, estrogens, androgens, and cholinergic drugs. As mentioned above, Ellman [7] reported beneficial effect from the use of x-ray therapy. Pearson [2b] used corticotropin for one patient who had an associated condition known as Felty's syndrome. There was an improvement in the arthritis, but the lesions of the mouth and conjunctiva remained unchanged. Cadman [8] treated two patients with corticotropin, one of whom had an associated arthritic condition

3. Lisch, K.: Über Hereditäres Vorkommen des mit Keratoconjunctivitis sicca verbundenen Sjögrenschen Symptomenkomplexes, Arch. f. Augenh. **110**: 357, 1937.

4. Coverdale, H.: Some Unusual Cases of Sjögren's Syndrome, Brit. J. Ophth. **32**: 669 (Sept.) 1948.

5. Morgan, A. D., and Raven, R. W.: Sjögren's Syndrome: General Disease, Brit. J. Surg. **40**: 154 (Sept.) 1952.

6. (*a*) Ellman, P., and Weber, F. P.: Sjögren's Syndrome, Brit. M. J. **1**: 304 (Feb. 19) 1949. (*b*) Behrman, H. T., and Lee, K. K.: Sjögren's Disease, Arch. Dermat. & Syph. **61**: 63 (Jan.) 1950.

7. Ellman, P.; Weber, F. P., and Goodier, T. E. W.: Contribution to Pathology of Sjögren's Disease, Quart. J. Med. **20**: 33 (Jan.) 1951.

8. Cadman, E. F. B., and Robertson, A. J.: Treatment of Sjögren's Syndrome with ACTH, Brit. M. J. **2**: 68 (July 12) 1952.

and hepatosplenomegaly. Although there was a decrease in the size of the liver and spleen, there was no change in the oral or conjunctival symptoms of either patient. Frenkel [9] reported good results for one patient as long as corticotropin was used, but symptoms recurred after the patient discontinued therapy with the drug. Allington [10] reported five cases in which estrogens, androgens, and desoxycorticosterone acetate, alone and in combination, were used. The results were discouraging except in one case in which treatment included a combination of methyltestosterone and desoxycorticosterone acetate. Cooperman [11] obtained symptomatic relief for patients with the use of cholinergic agents, just as our own patient was benefited by the use of pilocarpine. These studies reveal that Sjögren's syndrome is most refractory to treatment. While some benefit has been obtained with the use of various agents, there is no one modality of treatment that will insure satisfactory results.

SUMMARY

It is suggested that the pathological changes seen in Sjögren's syndrome are related to the degenerative changes that occur in tissues of ectodermal origin in the process of aging. No one method of therapy has been found to insure satisfactory results.

109 Linwood Ave. (Dr. Kenny).

9. Frenkel, M.; Hellinga, G., and Groen, J.: Case of Sjögren's Syndrome Treated with Adrenocorticotropic Hormone, Acta endocrinol. **6**: 161, 1951.

10. Allington, H. V.: Dryness of the Mouth, Arch. Dermat. & Syph. **62**: 829 (Dec.) 1950.

11. Cooperman, H. O.: Sjögren's Syndrome: Secreto-Inhibitor Syndrome, Ann. West. Med. & Surg. **4**: 344 (July) 1950.

CONGENITAL SYMMETRICAL FINGER CONTRACTURES

REPORT OF A CASE

Barnett Zumoff, M.D., Brooklyn

Recently I observed an unusual type of congenital deformity of the hands in a 19-year-old aviation cadet applicant. While orthopedists with whom the case was discussed stated that they had seen a few such cases previously, no description of this deformity was found in standard orthopedic texts or specialized treatises on the hand. Because of this and because the family history of the patient supplies enough data to demonstrate the genetic transmission mechanism, the case is reported.

History.—The deformities described existed at birth, and have neither progressed nor receded significantly since then. They have not interfered with ordinary activity, nor with schoolwork or athletics. The subject's medical history is normal, with two exceptions: (1) frequent, moderately severe upper respiratory infections in early childhood, which disappeared gradually at age 9 or 10; (2) two episodes of severe tonsillitis, one at age 7, the other at age 10, during both of which the subject's heart was said to have been "weak." There were apparently no residual effects from these episodes. No heart murmurs were known to the subject, and no cardiovascular symptoms had been present. The patient had never been limited in activity.

Formerly in the Aviation Medical Service, 3700 Medical Group, at Lackland Air Force Base, San Antonio, Texas.

Physical Examination.—The second through fifth fingers of both hands were symmetrically flexed and were deviated toward the third finger of each hand. The maximal degree of extension possible to the subject is indicated in the accompanying roentgenogram and photograph (fig. 1). Full flexion to a fist was possible in both hands, and the grip and strength were normal. When an attempt was made to extend the fingers of the hand maximally, a perceptible degree of hypertension of the metacarpophalangeal joints of the four affected fingers took place. This was apparently a compensatory mechanism. It could be seen well in a roentgenogram.

The proximal interphalangeal joints of the affected fingers were broadened and slightly flattened. The roentgenograms showed that part of this enlargement was due to the increased size of the phalangeal heads and part was due to thickening of the skin over the joints. Essentially normal shape and articulation of the phalangeal heads were present.

The skin of the volar surfaces of the affected fingers was thickened and hypertrophied. There was no evidence of any abnormality of the palmar fascia; none of the ridging or adhesions usually found in Dupuytren's contracture was present.

Fig. 1.—Above, dorsal view of patient's hands, showing enlargement of the proximal interphalangeal joints and the finger deviation toward a line between the third and fourth fingers. Below, roentgenogram showing lateral view of hands and hyperextension of the metacarpophalangeal joints occurring when the patient attempts to extend his fingers maximally.

Not all of the fingers were involved to an equal extent, but the changes were qualitatively similar in all, and corresponding fingers on the two hands showed the same degree of involvement. Both thumbs were entirely normal. The only other physical sign of note was a grade 1 blowing precordial systolic murmur, which increased somewhat with exercise. Electrocardiograms, cardiac fluoroscopy, and cardiac roentgenograms revealed no abnormalities.

Family History.—The genetic chart (fig. 2) shows the incidence of this deformity in the subject's family. No instances are noted in the paternal ancestry. The first person definitely known to be affected was the subject's maternal grandfather. His wife did not have the deformity. This couple had about eight children; the exact number is not known. There were probably three girls and five boys. Of the girls, two, including the subject's mother, had the deformity. Of the boys, one is known to have had it, and the subject believes that one or two others may have had it. (Only those definitely

known to have been affected are indicated in black on figure 2. The subject's mother and father had five children, all boys; of these the subject and one brother were affected, and the other three were not affected. After the death of the subject's father, the mother remarried; the only child of the second marriage, a girl, has the deformity.

There are seven definitely known cases of hand deformity in the subject's family, in four men and three women. In every case, the deformities were symmetrical, but the three women showed slightly less involvement than the four men. All of the latter had severe involvement of the second through fifth fingers; the subject's half-sister has only slight involvement of the fourth and fifth fingers, his aunt had moderate involvement of the third, fourth, and fifth fingers, and his mother has moderate involvement of the second through the fifth fingers. Of the seven affected persons, four are still living and in good health: the subject, his half-sister, his mother, and his maternal uncle. Three have died: the grandfather, in his 90's, of natural causes; the maternal aunt, at age 30, of tuberculosis, and the subject's brother, at age 1, of pneumonia. No other physical abnormalities have been present in any of them.

COMMENT

Enough information is available from this family history to establish almost certainly that the hand deformity under study is transmitted as a simple, non-sex-linked

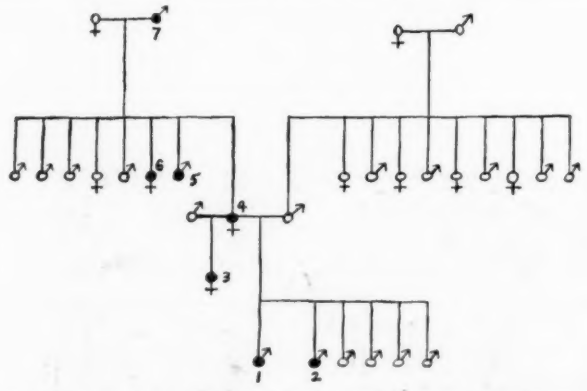


Fig. 2.—Genetic chart of the subject's family. Number 1 represents the subject; 2, his brother; 3, his half-sister; 4, his mother; 5, the affected maternal uncle; 6, the affected maternal aunt; and 7, the maternal grandfather.

Mendelian dominant, probably with complete penetrance. The adherence to a 50% ratio of affected offspring when one parent is affected is very satisfactory for such a small sample. It would appear, however, that there must be some modifying factor operative, probably a sex hormonal factor, to account for the uniformly milder degree of deformity in the affected females. Such an interaction of genetic and hormonal factors in congenital abnormalities may possibly be similar to that postulated in gout and certain other metabolic disorders.

A definite pathogenesis of the hand deformity is not established by this study. It seems quite probable, however, that the basic defect is a congenital shortening of the flexor tendons of the second through the fifth digits. This produces the attitude of flexion of the fingers and also accounts for the deviation of the fingers towards the third finger, the central axis of the hand. The very minimal bony changes at the proximal interphalangeal joints seem to be the result of a constantly flexed position of these joints. The skin changes seem also to be secondary to the position of the fingers.

The hand deformities, as far as is shown by the cases described, seem to constitute an isolated abnormality. There is no evidence of any other consistent physical finding in any of those affected. Those who died prematurely did so as a result of infectious diseases that were apparently unrelated to the hand deformities. The heart murmur heard in the subject, if it is organic at all, may well represent early mitral insufficiency as a result of rheumatic fever (the two bouts of tonsillitis associated with a "weak heart" in the history).

SUMMARY

Congenital symmetrical finger contractures, which are not described in standard textbooks, were found to be a familial defect. The subject's family history provides good evidence that this deformity is transmitted as a simple, non-sex-linked Mendelian dominant, probably modified in severity in females because of sex hormonal effects. No other physical abnormalities seem to be associated with the hand deformities.

373 Ave. S.

INEXPENSIVE MECHANIZED INTERRUPTED TRACTION APPARATUS

Harold N. Neu, M.D.
and
William J. Reedy, M.D., Omaha

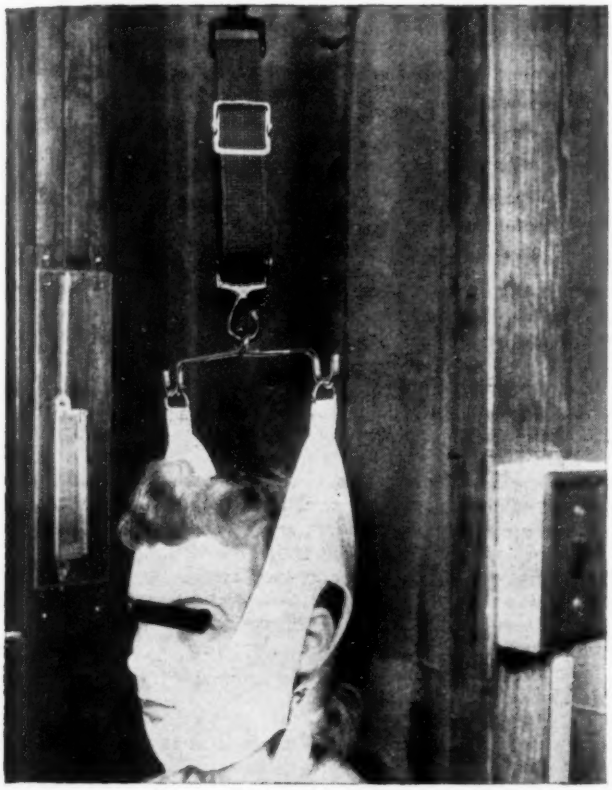
Pain in the cervical and shoulder regions with or without radiation to the scapular area and upper extremities is a syndrome seen fairly commonly in medical practice. Narrowing of the cervical foraminal spaces, which can be seen by roentgenogram, is often responsible for the pain syndrome. This is due most commonly to either cervical osteoarthritis or discogentic disease. Judovich and Bates [1] report marked improvement in patients on whom they have used traction of the cervical area of the spine. Our own experience with continuous traction has been that it is painful after very short periods of time. Interrupted cervical traction applied by the examiner or a therapist is time consuming and exhausting to the one applying it. Commercial instruments for intermittent traction are quite expensive. We devised a system of pulleys mounted in a frame and powered by a one-fourth horsepower motor mounted in tandem with a gear reducer. The traction is transfered through a scale that indicates the desired pull in pounds.

The eccentric wheel with a rotating bushing was placed in the dependent position with the scale reading at zero when the cable was fitted between the wheel and scale. Two sliding door pulleys were juxtaposed to minimize cable friction as the wheel rotates. When the strap is tightened to the desired amount of traction, the pounds of pull are reflected on the scale dial. This represents the maximum amount of pull for each excursion of the wheel. The wheel rotates at a rate of one 360 degree cycle per minute. The traction is firm, steady, and without discomfort. There is a 20 second count in the cycle without any force during which time the eccentric wheel

From the Department of Medicine, Creighton University School of Medicine.

1. Judovich, B. D., and Bates, W.: Pain Syndromes: Diagnosis and Treatment, ed. 4, Philadelphia, F. A. Davis Company, 1953.

bushing rotates through the superior arc of the excursion. The amount of traction desired is determined by shortening the strap, with the scale at the bottom of the mortise, and observing the scale dial, which reflects the traction pull in pounds. To increase the pounds of traction per minute of operating time the machine can be stopped



Interrupted traction mechanism in use, showing scale dial, frame, and switch.

by an electric switch for any desired period of time. This inexpensive apparatus was constructed by one of us (W. J. R.) during spare time from materials readily available in any hardware shop. It is safe, accurate in operation, and saves the patient the discomfort of continuous traction beyond a few pounds. The mechanism is made mobile by the single rollers fixed to the base.

324 City National Bank Bldg. (2) (Dr. Reedy).

ANTIDROOL MASK FOR CHILDREN WITH CEREBRAL PALSY

S. Malvern Dorinson, M.D., San Francisco

Drooling is one aspect of the child with cerebral palsy that has not been given enough importance in the usual therapies. In the past, it was thought to be a sign of mental deficiency, and it often is a cause for social rejection. Actually, it is merely a symptom of some physical deficiencies in the muscle control of the mouth, jaw, and throat.

Drooling is the act of allowing the saliva to drip out of the mouth. Normally, the saliva is pushed to the back of the mouth by the posterior tongue muscles accompanied by closing of the mouth and contraction of the pharyngeal muscles in a normal swallowing movement. Children with cerebral palsy who drool are characterized by poor mouth control, poor tongue control, and other factors concerned in a normal swallowing pattern. These children are invariably "mouth-breathers," but this is not necessarily because of enlarged tonsils and adenoids, though such is frequently the case. Removal of tonsils and adenoids does not in itself correct the breathing pattern, which proves that there are other neuromuscular factors involved.

The mastery of the normal swallowing pattern plus learning to breathe through the nose with the mouth closed stops the drooling. The usual method of teaching these children to swallow is to drop fluids on the back of the tongue to encourage tongue retraction and elevation of the posterior part. Later the child learns to suck and drink with a straw with the lips closed. Sometimes chewing gum is recommended. This promotes the use of the jaw muscles but may increase the drooling because the mouth is not kept closed. It was felt that it would be worth while to attempt some method of preventing mouth breathing, with or without forcible lip closure, in the thought that, as the saliva collected in the mouth, it would have to be swallowed or the child would choke. Since

Typical child wearing antidrool mask; note that nostrils are unobstructed.

these children were able to swallow, though slowly and with effort, it was unlikely that they would choke themselves.

USE OF MASK

At first, a strip of adhesive tape was placed across the lips to seal them. This proved effective but was so uncomfortable that some other method had to be devised. A type of jaw mask was then designed that blocked entrance of air through the mouth but permitted breathing through the nose. The masks are made of pieces of horsehide lined with softer leather to fit around the chin and over the mouth to include the upper lip. The nostrils are left free for breathing. A piece of sponge rubber is placed

Consultant in Cerebral Palsy, Bureau of Crippled Children Services, State of California.

inside and underneath the leather lining to block the air and secretions from the mouth opening more effectively. Pieces of old inner tube are used for elastic straps to hold the mask on. These rubber straps were placed over the crown of the head to give a slight pull to mouth closure. The saliva, which then collected in the mouth, could still run forward but was sealed off by a sponge rubber pad in the inner side of the mask and could not escape from the mouth. When enough of this had collected, the child was literally forced to swallow and he emptied his mouth with three or four gulps. After a while he learned to swallow regularly to avoid this collection of saliva at the front of his mouth.

These children wear the masks for as long as 30 minutes at various times during the day. They are worn usually while the child is doing other activities such as walking, training, or hand skills. It was estimated that, in the course of a half hour, a child swallows at least 120 times. There was good carry-over after the mask was removed, and the children gradually develop the habit of swallowing their saliva instead of drooling. The figure shows a typical child wearing such a mask.

When the mask is removed after a treatment period, the inside is wet where the saliva has been blocked. As the child improves there is less and less dampness on the inside of the mask. When the child succeeds in keeping his mask dry, the treatment is stopped as drooling has been mastered by the child's own reflex efforts.

This mask has been used in approximately 10 children and has proved successful in every case. In some instances, the treatment period was only one month, and in others it lasted up to six months. These children were between 3 and 8 years old and attended special classes for the children with cerebral palsy where the supervision was constant and well directed.

442 Post St.

DELAYED BARBITURATE INTOXICATION

Alan L. Michelson, M.D.
Charles J. Frahm, M.D.
and
Kermit H. Katz, M.D., Boston

Next to carbon monoxide, the barbiturate group of drugs is the most frequent source of poisoning, both accidental and suicidal.[1] In recent years there has been a noticeable swing away from the use of long-acting members of the barbiturate group, such as phenobarbital and barbital, to the quicker and short-acting group, notably pentobarbital (Nembutal) and secobarbital (Seconal) sodium. Each category of barbiturates requires the physician to be familiar with the varying times of onset of action and the usual duration of such action so that the drugs may be used most effectively and their toxic manifestations recognized. To complicate this situation further, there is a proprietary product Enseals Seconal sodium available now that consists of "timed disintegrating tablets" intended to produce a delayed hypnotic effect of a rapid, short-acting barbiturate. As illustrated in the following case report, ingestion of this preparation may significantly alter the clinical picture previously encountered in cases of barbiturate poisoning.

REPORT OF A CASE

A 37-year-old white married woman, with a history of a previous suicidal attempt by barbiturate ingestion, was admitted to the Fifth Medical Service of the Boston City Hospital at 3:30 p. m. on Sept. 25, 1953. Shortly before, at 2:45 p. m., she had swallowed, with suicidal intent, 27 timed disintegrating tablets each containing 0.1 gm. of secobarbital. The patient had had extensive psoriasis for many years and had received considerable dermatological and psychiatric care during the several months prior to admission. One week before, she had been discharged from another hospital after treatment for the psoriasis and was given a prescription for 30 of the timed disintegrating tablets.

On admission to the hospital the patient was alert and well oriented; she was agitated and weeping. The temperature was 98.6 F, the pulse rate 80 per minute, respirations 20 per minute, and the blood pressure 110/60 mm. Hg. The skin was warm and flushed, and there was generalized psoriasis. Apart from marked kyphoscoliosis, physical examination was noncontributory. There were no abnormalities on neurological examination. Urinalysis was negative. The hemoglobin level was 12.2 gm., the hematocrit 38%. The corrected sedimentation rate (Wintrobe) was 2 mm. per hour. The white blood cell count was 11,100, with a normal differential count. The nonprotein nitrogen level of the blood was 25 mg. per 100 ml., blood sugar 96 mg. per 100 ml., and carbon dioxide combining power 46 vol. %. The serum chlorides were 90, sodium 136.5, and potassium 4.2 mEq. per liter.

Promptly after the patient was admitted to the hospital, her stomach was emptied and a small amount of orange-pink fluid removed. After the stomach was washed with isotonic sodium chloride solution, several ounces of magnesium sulfate solution was instilled through the gastric tube. For the ensuing nine hours, until 1:00 a. m. Sept. 26, 1953, the patient was reexamined at frequent intervals, and no change was noted in her physical or mental state. At 5:00 a. m. 13½ hours after admission, the woman was found by the nurse to be comatose. The pulse rate was now 120 and the respirations 24 per minute. The blood pressure was 90/60. The pupils were alternately dilated and constricted and reacted sluggishly to light. The deep tendon reflexes were generally hyperactive but during the next several hours became underactive and ultimately were absent. A lumbar puncture yielded clear fluid under normal pressure and without cells; the protein content was 30 mg. per 100 ml. The blood level for barbiturate was 0.9 mg. per 100 ml. by the ultraviolet spectrophotometry method.[2]

The patient was treated with picrotoxin intravenously and caffeine-sodium benzoate intramuscularly. During the first 12 hours her temperature rose to 106.4 F rectally, but was lowered to 102 F by alcohol sponge baths and administration of aspirin. The woman remained in a precarious and comatose state until 10:00 a. m. Sept. 27, 1953, approximately 43 hours after admission, when she began to respond to painful stimuli and manifested a return of deep tendon reflexes. Gradually thereafter there was a return of consciousness, and on Sept. 28, 1953, approximately 73 hours after admission, she was able to talk and to answer questions coherently, although a tendency toward drowsiness persisted. On Sept. 30, 1953, she was discharged, symptom-free, to the outpatient psychiatric clinic.

COMMENT

On entry to the hospital, this patient presented the problem of having ingested 2.7 gm. of secobarbital in specially coated tablets designed to disintegrate in four to six hours. Gastric lavage and a purge were given, and,

From the fifth and sixth medical services (Boston University), Boston City Hospital.

1. Conferences on Therapy (from Cornell University Medical College and New York Hospital) Treatment of Barbiturate Poisoning, Am. J. Med. 1: 93 (July) 1946.

2. Walker, J. T.; Fisher, R. S., and McHugh, J. J.: Quantitative Estimation of Barbiturates in Blood by Ultra-Violet Spectrophotometry Analytical Method, Am. J. Clin. Path. 18: 451 (June) 1948.

during the ensuing 9½ hours, there was no untoward change in her condition. It was considered questionable that any signs of barbiturate poisoning would occur; however, approximately 14 hours after entry, the patient was discovered in coma. Her course thereafter resembled that of patients with profound barbiturate intoxication, and she responded gradually to appropriate therapy.

The coincidence of marked kyphoscoliosis of the spine and a profound effect of a hypnotic drug is reminiscent of the effect of morphine on patients with such deformities and with chronic bronchopulmonary disease. The increased sensitivity of such patients to some narcotics and possibly to barbiturates has been previously reported.[3] However, this patient did not show the usual depression of respiratory rate, and any excessive sensitivity would not bear on the long period of time between ingestion and onset of symptoms.

The manufacturer of the product taken by the patient states that the possibility of delayed disintegration exists under certain unusual conditions, i. e., prolonged emptying time of the stomach, acid pH of the intestine, or if in some extraordinary manner the tablets did not come into contact with moisture.[4] In this case the stomach was found to be almost entirely empty approximately one hour after ingestion, and subsequent history established the tablets were taken with a glass of orange juice. However, coma that was proved to be due to barbiturate poisoning by the high barbiturate level of the blood did occur in 9½ to 14 hours after ingestion. This situation emphasizes the necessity of alert and continuing observation of any patient suspected of having taken barbiturates coated to produce delayed effect.

818 Harrison Ave. (18) (Dr. Michelson).

3. Katz, K. H., and Chandler, H. L.: Morphine Hypersensitivity in Kyphoscoliosis, New England J. Med. **238**: 322 (March 4) 1948.
4. Weigand, C. G.: Personal communication to the authors, October, 1953.

ATTACK ON A HUMAN BEING BY A RABID INSECTIVOROUS BAT

Robert H. Kough, M.D., Boiling Springs, Pa.

Although there are numerous reports of human beings having been bitten by rabid vampire bats,[1] a search of the literature reveals only one proved attack on a human being by a rabid insectivorous bat.[2] That particular attack, by a member of the species Dasypterus floridanus on a 7-year-old boy in a remote section of Hillsborough County, Florida, occurred only three months before the attack involved in the case reported here. That rabies can occur in insectivorous bats both naturally [3] and experimentally [4] has already been established. Certainly its natural occurrence in bats native to the United States must be rare—and attacks on man by such bats, rarer still. This is the report of an unprovoked attack on a human being by a member of the species Lasiurus cinereus (Beauvois), the hoary bat.

REPORT OF A CASE

On Sept. 29, 1953, a 34-year-old woman was bitten in the triceps region of the left arm by a bat. The bat was trapped and turned over to the Pennsylvania Game Commission. Until the following morning, when the animal died, it showed a "furious" type of behavior, hurling itself repeatedly at the sides of its cage. Examination of the cornu ammonis by the laboratory of the Pennsylvania Bureau of Animal Industry revealed typical Negri bodies. The diagnosis of rabies was confirmed by the development of typical symptoms and Negri bodies in two rabbits inoculated intracerebrally with suspensions of the bat's brain tissue.

Twenty minutes after the patient was attacked, the wound was scrubbed and irrigated with a soap solution and cauterized with an electrocautery. A 14 day course of vaccination was begun 40 hours later with a commercial killed-virus preparation of rabbit origin produced by a modification of the Semple method. At the time of writing the patient was symptom free.

COMMENT

The occurrence of rabies in a fairly common species of bat suggests that the bat population be sampled in various portions of the United States to determine if a significant rabies reservoir exists. Four lesser and three greater brown bats shot by the Pennsylvania Game Commission in the vicinity of, and following, this attack were not rabid. On the other hand, Scatterday [2] reports that 6 of 385 insectivorous bats collected in Florida during the summer of 1953 were rabid. Pawan [3a] in 1936, while studying the transmission of rabies to human beings by vampire bats in Trinidad, discovered rabies in one insectivorous and four fruit-eating bats and suspected that they had been infected by vampire bats. Since the hoary bat migrates as far south as Florida but not as far as Trinidad,[5] one might speculate as to a connection between the nearly simultaneous occurrences of rabies in the bats of Pennsylvania and Florida.

SUMMARY

An unprovoked attack on a human being was made by a rabid insectivorous bat. The nearly simultaneous occurrence of rabies in bats collected from Pennsylvania and Florida indicates that a hitherto unrecognized rabies reservoir may exist in the eastern portion of the United States.

112 Fourth St.

1. Johnson, H. N.: The Relation of Diseases in the Lower Animals to Human Welfare: Rabies, Ann. New York Acad. Sc. **48**: 361-383 (April 10) 1947.
2. Scatterday, J. E., and Galton, M. M.: Bat Rabies in Florida, read before the Southern Veterinary Medical Association, Atlanta, Ga., Nov., 1953.
3. (*a*) Pawan, J. L.: The Transmission of Paralytic Rabies in Trinidad by the Vampire Bat (Desmodus rotundus murinus, Wagner, 1840), Ann. Trop. Med. **30**: 101-130 (April) 1936. (*b*) Scatterday and Galton.[2]
4. Reagan, R. L., and Brueckner, A. L.: Transmission of a Strain of Rabies Virus to the Large Brown Bat (Eptesicus fuscus) and to the Cave Bat (Myotis lucifugus), Cornell Vet. **41**: 295-298 (July) 1951.
5. Allen, G. M.: Bats, Cambridge, Mass., Harvard University Press, 1939.

Effects of Withdrawal of Cortisone.—Cortisone and pituitary adrenal corticotropin (ACTH) have been used extensively in the treatment of rheumatic fever and rheumatic carditis, but there has been a paucity of literature on the withdrawal effects. It is in the patient with severe rheumatic carditis or previous history of rheumatic fever that a severe withdrawal is of the most consequence because it subjects the individual who has the least tolerance to the most strain. . . . Too little attention has been paid to this phenomenon. . . . In the evaluation of therapy one must consider the possible consequences of the withdrawal period.—Capt. R. S. Daniels; Capt. G. A. Gulotta, and Capt. W. L. Peterson, The Withdrawal Effects of Cortisone in the Therapy of Rheumatic Fever in Young Adults, *United States Armed Forces Medical Journal*, February, 1954.

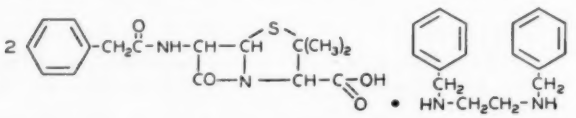
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Benzathine Penicillin G.—Bicillin (Wyeth).—N,N'-dibenzylethylenediamine dipenicillin G.—The structural formula of benzathine penicillin G may be represented as follows:



Actions and Uses.—Benzathine penicillin G, a complex salt of penicillin of relatively low solubility in water, exhibits somewhat more prolonged action than more soluble salts of the drug and provides comparable blood levels. Its effective absorption from the gastrointestinal tract is not affected appreciably by food intake; the use of added acid buffers is not required for oral administration. As with other orally administered compounds, it must be dissolved prior to intestinal absorption, but because of the limited solubility of benzathine penicillin G in the stomach, it is not highly susceptible to destruction by gastric juice. It is tasteless and is stable in aqueous suspension for 24 months at ordinary room temperatures. Orally it produces effective blood levels when administered in adequate doses at six to eight hour intervals. By the intramuscular route, a single injection produces an effective blood level for one to four weeks or longer, depending on the size of the dose.

Benzathine penicillin G is indicated for the prevention or treatment of infections susceptible to therapy with penicillin, and, in general, it shares the same indications as other compounds of penicillin G. (See New and Nonofficial Remedies under the monographs on penicillin.) Because of the infrequency of injection required, parenteral administration is particularly useful for the prevention and treatment of secondary infection following tonsillectomy and tooth extraction for patients with a history of rheumatic fever, in rheumatic heart disease, and whenever prolonged penicillin protection is indicated.

Following oral administration loose stools have been observed in some patients, but in most cases no other signs of toxicity have been reported. Hypersensitivity reactions to this penicillin compound have been infrequently reported.

Dosage.—Benzathine penicillin G is administered orally either as a liquid suspension or as tablets, and parenterally by intramuscular injection as an aqueous suspension.

Orally, a dose of 200,000 units or more every six to eight hours, prescribed in liquid or tablet form, is usually adequate for mild infections. An oral dose of 200,000 units usually provides adequate blood levels for as long as eight hours. Oral doses of 200,000 to 300,000 units every six to eight hours may be necessary to maintain the blood serum concentration above 0.1 unit per cubic centimeter. The dosage for children may be calculated on the basis of 3,000 units per pound (about 6,600 units per kilogram) of body weight, administered every eight hours. In the acute phase of pneumococcic infections (except meningitis) or in streptococcic pneumonia, an initial oral dose of 600,000 units of a potassium penicillin G preparation may be supplemented by the oral administration of 200,000 to 300,000 units every six to eight hours, until temperature has remained normal for at least 48 hours. Intramuscular injection of 600,000 units can be used to initiate therapy of pneumococcic and nonhemolytic streptococcic infections without bacteremia, which may be followed by oral administration of 300,000 units every eight hours. If bacteremia is present, the oral dose should be increased to 600,000 units or parenteral therapy should be substituted. An injection of 600,000 units every other day should be used in severe infections. In hemolytic streptococcic infections without bacteremia, 200,000 to 300,000 units orally every six to eight hours for at least seven days is recommended; with bacteremia, an initial injection of 600,000 units should be given, supplemented by oral doses of 200,000 units every eight hours. In micrococcic (staphylococcic) infections without bacteremia, an oral dose of 300,000 units every six to eight hours may be tried, but if ineffective, parenteral therapy should be substituted. When any complication or bacteremia is present in micrococcic infections, parenteral therapy only should be used. Susceptible micrococcic infections may be treated with a dose of 1.2 million units repeated in 48 to 72 hours if required.

Intramuscular injection of a single dose of 600,000 units is recommended as a preventive measure one day prior to tonsillectomy, tooth extraction, or other minor surgical procedures in patients with a history of rheumatic fever and rheumatic or congenital heart disease. In the prevention of recurrent rheumatic fever, injection of 600,000 units every two weeks or 1.2 million units every four weeks is recommended. This dosage eliminates the streptococcic carrier state in most persons. In acute beta hemolytic streptococcic infections, a single intramuscular dose of 600,000 units is usually sufficient. In acute gonorrheal urethritis, a single dose of 300,000 units intramuscularly is adequate to effect a cure in most cases. When gonorrheal urethritis is complicated with a suspected primary lesion of syphilis, it is advisable to treat the patient with either sulfonamides or with streptomycin rather than penicillin until the diagnosis of syphilis can be verified or excluded by repeated darkfield examinations and serologic examination of the blood repeated at monthly intervals for three months. In gonorrheal complications, repeated injections are rarely necessary. In gonorrhea complicated by suspected primary syphilis, an injection of 1.2 million units may be expected to eradicate or abort syphilitic infection.

Wyeth Laboratories, Inc., Philadelphia.

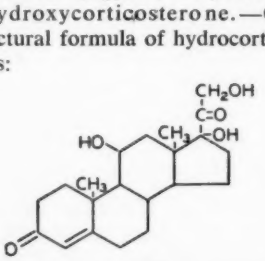
Suspension Bicillin (Oral): 60 cc. bottles. A flavored suspension containing 30,000 or 60,000 units of benzathine penicillin G in each cubic centimeter. Buffered with 0.5% sodium citrate and preserved with 0.12% methylparaben, 0.014% propylparaben and 0.625% sodium benzoate.

Aqueous Suspension Bicillin (Injection): 1 cc. Tubex cartridges. A suspension containing 600,000 units of benzathine penicillin G in each cubic centimeter. Buffered with 0.5% sodium citrate and preserved with 0.09% methylparaben and 0.01% propylparaben.

10 cc. vials. A suspension containing 300,000 units of benzathine penicillin G in each cubic centimeter. Buffered with 1% sodium citrate and preserved with 0.12% methylparaben and 0.014% propylparaben.

Tablets Bicillin: 100,000 and 200,000 units. U. S. patent 2,627,491. U. S. trademark 569,161.

Hydrocortisone.—Cortef (Upjohn).—Hydrocortone (Sharp & Dohme).—17-Hydroxycorticosterone.—$C_{21}H_{30}O_5$.—M.W. 362.45.—The structural formula of hydrocortisone may be represented as follows:



Actions and Uses.—Hydrocortisone may be the principal glycogenic steroid secreted by the adrenal cortex, and under conditions of stress may participate in physiological reactions to a greater degree than cortisone. It produces similar and usually reversible metabolic effects: retention of sodium and water, increased urinary excretion of potassium and calcium, hyperglycemia, which may require adjustment of insulin dose in

patients with diabetes mellitus, negative nitrogen balance, increased serum globulin or reversed albumin-globulin ratio, and increased creatine and uric acid excretion. It also produces reversible general physiological or hormonal effects, including excessive adrenal cortical action such as occasional rounding of the face, mild hirsutism, acne, striae of the skin, and amenorrhea. Prolonged administration may cause reduction in the size of the adrenal cortex, inhibition of the production of corticotropin, and temporary symptoms of adrenocortical insufficiency on withdrawal of the hormone. It inhibits the activity of the lymphatic system, producing lymphopenia and reduction in size of enlarged lymph nodes. Temporary reduction of urinary corticosteroids and 17-ketosteroids and brief suppression of eosinophil response following cessation of therapy occur in some patients. Increase in blood pressure rarely results except when significant antecedent vascular or renal damage is present and when retention of sodium and water develops. In some cases a decrease in prothrombin time has been noted, and there may be an increased tendency to develop thromboembolic phenomena. Mental changes may occur in some patients, including improved attitude and sense of well-being, insomnia, and rarely, intensification or precipitation of preexistent, latent mental derangement such as schizophrenia. Like cortisone, hydrocortisone may reactivate latent tuberculosis and other bacterial infections and may cause a recurrence of peptic ulcer. Although delay in wound healing has been demonstrated in experimental animals, primary healing of skin wounds in human beings is seldom affected. Hydrocortisone is useful in the treatment of frank adrenal insufficiency diseases, such as Addison's disease; collagen diseases such as rheumatoid arthritis and disseminated lupus erythematosis; allergic conditions such as intractable bronchial asthma, hay fever, and urticaria; severe skin diseases, such as pemphigus and exfoliative dermatitis; inflammatory diseases of the eye involving its systemic action in iritis and iridocyclitis and local action in nonspecific superficial keratitis; and in blood diseases such as acute leukemia and chronic lymphomas. In some conditions it may be lifesaving; in others its effect is merely palliative or temporary. Discontinuance of therapy in rheumatoid arthritis may be followed by reappearance of signs and symptoms of the disease within 24 to 48 hours. In some cases, remission of signs and symptoms may persist for several weeks or months. The drug is not effective in reversing the permanent pathological changes in long-standing rheumatoid arthritis.

Hydrocortisone may be employed for relief of symptoms in nonsuppurative thyroiditis, acute Bell's palsy, and the allergic manifestations of trichinosis. When other measures fail in the treatment of ulcerative colitis, it also may be used if the potential danger of hemorrhage and perforation is borne in mind. The physiologic and therapeutic effects of hydrocortisone are qualitatively similar to those of cortisone. Comparative clinical studies in patients with rheumatoid arthritis tend to indicate that hydrocortisone is therapeutically effective in smaller doses than cortisone; however, it has not been established that the incidence of undesirable metabolic or hormonal effects is minimized by the use of hydrocortisone as compared to cortisone.

The advantages of administering hydrocortisone should be weighed against its possible deleterious effects. Because of its accompanying physiological actions, the drug usually is contraindicated for the long-term treatment of any condition complicated by diminished cardiac reserve, congestive heart failure, with the possible exception of failure caused by acute rheumatic carditis, hypertension, latent or overt psychotic tendencies, severe diabetes mellitus, advanced cachectic states, renal insufficiency, and senescence. It is also relatively contraindicated in the presence of recent surgical repairs, such as intestinal anastomoses. The presence of active or questionably healed tuberculosis is an absolute contraindication. Since prolonged therapy can mask the signs and symptoms of either acute or chronic infection, special care is necessary to detect any reactivation of latent chronic infection that may occur. X-ray examinations of the chest should be made in all patients receiving extended treatment.

Hydrocortisone is readily absorbed following oral administration; the effects of such medication are manifest in 3 to 10 hours and persist about 12 to 14 hours. Its onset and duration of antirheumatic action seems comparable to that of cortisone.

Dosage.—Hydrocortisone is administered orally. Daily observation is essential to determine individual response and to establish maintenance dosage. Routine determinations of blood pressure and body weight as well as a urinalysis, electrocardiogram, and complete blood count are essential. Occasionally, such special studies as blood sugar, carbon dioxide combining power, and blood electrolytes are advisable. The dosage should be adjusted to the minimum amount that will provide relief adequate for rehabilitation; this adjustment may minimize or avoid hypercortisonism. Studies thus far indicate that the clinically effective oral dosage ratio of hydrocortisone to cortisone averages 1:1.6. For rheumatoid arthritis, the initial average daily dosage for adults is 40 to 80 mg. given in divided doses four times a day, until the desired effect is obtained (not over two weeks); the dosage is then reduced by steps of not more than 10 mg. to the minimum effective maintenance level. Withdrawal of treatment should be accomplished by similar gradual reduction. Variations in the daily maintenance dosage should be adjusted to meet the natural fluctuations of the disease, and therapy should be withdrawn occasionally long enough to determine whether remission has occurred. In other diseases a dose of 20 mg. of hydrocortisone is recommended whenever a 25 mg. dose of cortisone would otherwise be indicated. Other dosage also may be estimated on the basis of this same ratio.

The appearance of exaggerated hormonal effects may require withdrawal of therapy. The drug should not be withdrawn from surgical candidates, for increased dosage may be required. With prolonged therapy, restriction of sodium and administration of potassium chloride may be necessary to maintain electrolyte balance. The cautious use of diuretics may be temporarily indicated, but these may provoke a further dangerous loss of potassium. In patients with diabetes mellitus, insulin requirements may be increased. Activity should be restricted in cardiovascular disease.

Continued supervision of patients is essential after discontinuation of therapy because the drug may continue to act for some time after the last dose. A temporary hypoadrenal state, manifested by weakness and hypoglycemia, may occur after abrupt withdrawal, but return of adrenal function may be expected within two weeks.

Tests and Standards.—

Physical Properties: Hydrocortisone is a white, odorless powder, m.p. 215-220° (with decomposition). It is freely soluble in dioxan and in methanol, and very slightly soluble in ether and in water. The approximate amounts that dissolve in the following solvents to form 100 ml. of solution are: 2.0 gm. in alcohol and 0.4 gm. in chloroform.

Identity Tests: Dissolve about 25 mg. of hydrocortisone in 10 ml. of alcohol and add 15 ml. of a saturated solution of 2,4-dinitrophenylhydrazine in 2 *N* hydrochloric acid: a red precipitate forms *(distinction from cortisone acetate and hydrocortisone acetate which give reddish orange precipitates).*

Put 3-4 mg. of hydrocortisone in a 5 ml. test tube and add alcohol dropwise, warming the suspension after the addition of each drop, until solution is complete. Add 2 drops of water to the hot solution and transfer to a microscope slide a drop of the resulting suspension. View the drop under low magnification (10x ocular and 10x objective): a large proportion of the crystals are rectangular *(distinction from cortisone acetate, which crystallizes in slender rods, some of them radiating, and from hydrocortisone acetate, which crystallizes as triangular prisms).*

Add 2 ml. of sulfuric acid to about 10 mg. of hydrocortisone in a test tube: the solution is brownish red by transmitted light and shows a strong yellowish green fluorescence by reflected light *(distinction from cortisone, which gives a yellowish solution that does not fluoresce).*

The specific rotation, [*a*] 25, D, of a solution containing 0.125 gm. of hydrocortisone in 25 ml. of methanol is +160 to +170°.

A 0.001% solution, prepared as directed in the spectrophotometric assay for hydrocortisone, exhibits an ultraviolet absorption maximum at about 242 mμ [specific absorbancy, E(1%,1 cm.), about 445].

Purity Tests: Dry about 0.1 gm. of hydrocortisone, accurately weighed, at 105° for four hours: the loss in weight does not exceed 1.0%.

Assay: (Hydrocortisone) Prepare a 0.001% solution of hydrocortisone as follows. Transfer to a 100 ml. volumetric flask 20 mg., accurately weighed, of hydrocortisone, add about 75 ml. of methanol, shake the flask until the hydrocortisone dissolves, fill to the mark with methanol, and mix. Transfer to a 200 ml. volumetric flask 10 ml. of the solution, fill to the mark with methanol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 242 mμ, using methanol as a blank. The concentration of hydrocortisone in the solution in mg./ml. = absorbancy ÷ 44.5. The amount of hydrocortisone is not less than 95.0 nor more than 105.0%.

Dosage Forms of Hydrocortisone

TABLETS. *Identity Tests:* Add 2 ml. of sulfuric acid to an amount of powdered tablets, equivalent to about 10 mg. of hydrocortisone, in a test tube: the solution initially is light yellow with a strong yellowish green fluorescence by reflected light and becomes brownish red on standing.

Powder a number of tablets equivalent to 20-25 mg. of hydrocortisone. Transfer the powder to a 3 ml. centrifuge tube, fill the tube with alcohol, and shake (or stir) to form a suspension. Centrifuge the mixture for 10 min. at 1,000 rpm. Transfer the supernatant liquid to a small beaker and heat on a steam bath until the volume is reduced to 2 or 3 drops. Remove from the bath, add 1 ml. of water to the hot solution, transfer to a microscope slide a drop of the suspension formed, and view the drop under low magnification (10x ocular and 10x objective): a large proportion of the crystals are rectangular.

The solution prepared for the spectrophotometric assay has an ultraviolet absorption maximum at about 242 mμ.

Assay: (Hydrocortisone) Weigh 10 tablets and powder them. Transfer to a 100 ml. volumetric flask an amount of powder equivalent to 20 mg. of cortisone and add about 75 ml. of methanol. Shake the flask mechanically for 15 min., fill to the mark with methanol, and mix. With gentle suction filter the mixture through a sintered glass funnel of medium porosity. Transfer to a 200 ml. volumetric flask 10 ml. of the filtrate, fill to the mark with methanol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 242 mμ, using methanol as a blank. The concentration of hydrocortisone in mg./ml. = absorbancy ÷ 44.5. The amount of hydrocortisone is not less than 90.0 nor more than 110.0% of the labeled amount.

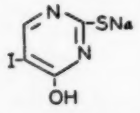
Sharp & Dohme, Division of Merck & Company, Inc., Philadelphia.

Tablets Hydrocortone: 5, 10, and 20 mg. U. S. trademark 536,020.

The Upjohn Company, Kalamazoo, Mich.

Tablets Cortef: 10 mg. U. S. trademark 583,191.

Iothiouracil Sodium.—Itrumil Sodium (Ciba).—$C_4H_2IN_2NaOS$. —M.W. 276.06.—Sodium 5-iodo-2-thiouracil.—The structural formula of iothiouracil sodium may be represented as follows:



Actions and Uses.—Iothiouracil sodium, an organic chemical iodine derivative of thiouracil, exhibits the thyroid-involuting effect of iodine and the antithyroid action (inhibition of thyroxin or thyroglobulin) of the parent drug. Iothiouracil sodium induces less thyroid vascularization and goitrogenic effects (increased thyroid hyperplasia, gland size, and friability) than noniodinated thiouracil compounds. Although animal experiments indicate that iothiouracil sodium is more readily taken up by the thyroid than noniodinated derivatives, clinical evidence so far obtained does not warrant the conclusion that the drug is superior to noniodinated derivatives administered concomitantly with iodine. Iothiouracil sodium is broken down in the body into its thiouracil and iodine portions, which are excreted separately.

Iothiouracil sodium is indicated in the preoperative management of hyperthyroidism, in the treatment of patients for whom thyroidectomy is contraindicated, and in the treatment of postoperative recurrent hyperthyroidism. It should be used with caution during pregnancy and should be discontinued during the last few weeks of pregnancy to prevent complications in the newborn; infants should not be nursed by mothers receiving therapy. It should be employed cautiously in persons known to be sensitive to iodine.

Like other thiouracil derivatives, iothiouracil sodium is associated with a lower incidence of toxic effects than the parent compound, thiouracil, but likewise may produce serious reactions that require cessation of medication. These include drug fever, skin rash, severe leukopenia, granulocytopenia, and swelling of the cervical lymph nodes. A leukocyte and differential blood count should be made before treatment because of the frequent "spontaneous" appearance of leukopenia in hyperthyroidism; regular blood counts should be made during therapy and the patient instructed to report the appearance of any adverse symptoms.

Dosage.—Iothiouracil sodium is administered orally. In any given dose, iodine accounts for approximately 50%, the thiouracil molecule for 40%, and the sodium ion for 10% of the prescribed amount.

For preoperative management, an initial daily dosage of 150 to 200 mg. (divided into doses of 50 mg. three or four times daily) may produce a satisfactory response in many patients, but most thyrotoxic patients require a daily dosage of 300 mg. (100 mg. three times daily) to produce rapid and complete remission. The established effective dosage for each patient should be continued until the disease has been controlled satisfactorily. For optimal preoperative results, from the standpoint of decreased vascularity and friability of the gland, at least four weeks of therapy are recommended; severely ill patients may not respond adequately until after eight weeks. If a patient does not improve after a month of treatment at the minimum daily dosage level of 150 mg., the dosage should be increased to 300 mg. daily. If a second month of therapy at the higher dosage level fails to produce satisfactory response, the drug should be discontinued. Rarely, a daily dosage level of 600 to 800 mg. may be instituted to control refractory patients.

For the treatment of patients in whom thyroidectomy is contraindicated, or in instances of postoperative recurrence, the initially effective dosage may be gradually reduced to an adequate maintenance level. Therapy may be discontinued and resumed as required to keep the disease in check or to avoid untoward toxic effects; some patients cannot be kept in remission with continuous therapy.

Tests and Standards.—

Physical Properties: Iothiouracil sodium is an odorless, white to light yellow, crystalline powder, m.p. 235-240° (with decomposition). The approximate amounts that dissolve at 25° in the following solvents to form 100 ml. of solution are: 0.5 gm. in alcohol and 3.5 gm. in water. It is practically insoluble in acids. Iothiouracil sodium is usually obtained as the dihydrate which is reasonably stable to moisture and sunlight at room temperature. The pH of a 2% solution is 8.5-9.5.

Identity Tests: Strongly heat about 0.1 gm. of iothiouracil sodium with 5 ml. of sulfuric acid: violet vapors of iodine evolve.

On a loop of platinum wire hold a few crystals of iothiouracil sodium in a nonluminous flame: an intense yellow color is produced *(presence of sodium).*

Dissolve about 0.1 gm. of iothiouracil sodium in 100 ml. of water. To 1 ml. of the solution add 10 ml. of U.S.P. phosphate buffer, pH 7.0, and 1 ml. of Grote's reagent (Dissolve 2 gm. of hydroxylamine hydrochloride and 2 gm. of nitroferricyanide in 40 ml. of water and add 4 gm. of sodium carbonate. After the evolution of gases ceases, add 0.4 ml. of bromine, cool, filter the mixture into a 100 ml. volumetric flask, and fill to the mark with water. The solution can be kept for about 1-2 weeks in a refrigerator.): a green color appears in 5-10 min.

Dissolve about 0.25 gm. of iothiouracil sodium in 15 ml. of water with the aid of a little heat. Add several drops of glacial acetic acid, cool, and collect the precipitate on a filter; wash the precipitate well with cold water and then with alcohol, and dry in a vacuum desiccator over phosphorus pentoxide for 3 hours. The 5-iodo-2-thiouracil so obtained melts with decomposition at 220-225°.

Purity Tests: Dissolve 0.4 gm. of iothiouracil sodium in 21 ml. of water with the aid of a little heat. Add slowly, with swirling, 4 ml. of 1 *N* hydrochloric acid, and filter the mixture. Make up the filtrate to 25 ml. with water. Perform a *U.S.P. heavy metals test:* the amount of heavy metals does not exceed 20 ppm.

Dry about 1 gm. of iothiouracil sodium, accurately weighed, at 105° for five hours: the loss in weight does not exceed 14.0% for the dihydrate, 7.5% for the monohydrate, and 3.0% for the anhydrous material.

Assay: (Iothiouracil Sodium) Transfer to a 250 ml. glass-stoppered Erlenmeyer flask about 0.2 gm. of iothiouracil sodium, accurately weighed. Add about 15 ml. of water and warm in a hot water bath at 35-40° until solution is complete. Let the solution stand at room temperature for 30 min., cool to 5-10°, and add 100 ml. of *U.S.P. phosphate buffer,* pH 7.0, previously cooled to 10°, and 2 ml. of starch solution T.S. Place the flask in an ice bath and rapidly titrate to a permanent blue color with recently standardized 0.1 *N* iodine. Each milliliter of 0.1 *N* iodine is equivalent to 0.02761 gm. of anhydrous iothiouracil sodium The amount of anhydrous iothiouracil sodium is not less than 98.0 nor more than 102.0%.

(Iodine) Transfer to a 500 ml. Erlenmeyer flask about 0.25 gm. of iothiouracil sodium, accurately weighed. Add 100 ml. of water and a few glass beads. Simultaneously add 50 ml. of 50% sulfuric acid and 100 ml. of 6% potassium permanganate, and boil for 15 min. Remove from the flame and add 20 ml. of silver nitrate T.S. With constant swirling, add sodium sulfite crystals a few at a time until the permanganate color disappears and no manganese dioxide remains. Boil the yellow suspension until the vapors no longer are acidic to litmus, maintaining the volume by adding water occasionally. Add 5 ml. of nitric acid and continue boiling for 5 minutes. Cool, and transfer the precipitate to a tared filtering crucible, wash with water and with 10 ml. of alcohol, and dry at 105° for three hours. Each gram of silver iodide formed is equivalent to 0.5405 gm. of iodine and 1.176 gm. of iothiouracil sodium. The amount of iodine is not less than 43.7 nor more than 48.3%, equivalent to not less than 95.0 nor more than 105.0% of anhydrous iothiouracil sodium.

Dosage Forms of Iothiouracil Sodium

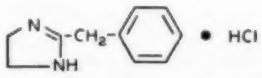
TABLETS. *Identity Tests:* The tablets respond to the identity tests for the active ingredient in the monograph for iothiouracil sodium.

Assay: (Iothiouracil Sodium) Weigh 20 tablets and grind them. Transfer to a glass-stoppered 250 ml. Erlenmeyer flask an amount of powder, accurately weighed, equivalent to about 0.2 gm. of iothiouracil sodium. Add about 10 ml. of 0.1 *N* sodium hydroxide and warm in a water bath at 35-40° for 10 min., cool in an ice bath to 5-10°, add 100 ml. of *U.S.P. phosphate buffer*, pH 7.0, previously cooled to 5-10°, and 2 ml. of starch solution T.S. Place the flask in an ice bath and titrate rapidly to a permanent blue color with recently standardized 0.1 *N* iodine. Each milliliter of 0.1 *N* iodine is equivalent to 0.02761 gm. of anhydrous iothiouracil sodium. The amount of anhydrous iothiouracil sodium is not less than 95.0 nor more than 105.0% of the labeled amount.

Ciba Pharmaceutical Products, Inc., Summit, N. J.

Tablets Itrumil: 50 mg. U. S. patent 2,585,615. U. S. trademark 564,371.

Tolazoline Hydrochloride.—Priscoline Hydrochloride (Ciba).—$C_{10}H_{12}N_2.HCl$.—M.W. 196.68.—2-Benzyl-2-imidazoline hydrochloride.—The structural formula of tolazoline hydrochloride may be represented as follows:



Actions and Uses.—Tolazoline hydrochloride is a potent adrenolytic, sympatholytic, and vasodilator drug. It blocks the transmission of impulses by sympathetic nerves, probably at their receptors, and also blocks the vasoconstrictive action of circulating epinephrine and levarterenol (*l*-norepinephrine). After blocking these sympathomimetic agents, the drug may cause "epinephrine reversal" by unmasking their vasodilating component. Unlike other adrenolytic drugs, tolazoline also produces a direct and histamine-like dilating effect on the wall of small blood vessels.

Tolazoline hydrochloride is chiefly effective for increasing blood flow in peripheral vascular disorders in which vasospasm is a prominent factor. Tolazoline is also effective, to a variable and lesser degree, in cases in which angiospasm is a factor of secondary significance. It is, therefore, a valuable adjunct to conventional therapy of peripheral ischemia and its resultant pain, loss of function, ulceration, gangrene, and other trophic manifestations. It is useful in the treatment of a high percentage of patients with acrocyanosis, acroparesthesia, arteriosclerosis obliterans, thromboangiitis obliterans (Buerger's disease), causalgia, peripheral vascular complications of diabetes mellitus, endarteritis, sequelae of frost bite, thrombophlebitis, Raynaud's disease, scleroderma, and ulcers of the extremities. Because the drug virtually abolishes normal vascular tone as well as neurogenic and humoral vasoconstriction in the extremities, it also can be employed as a diagnostic agent for the same purpose as sympathetic procaine block anesthesia, that is, to distinguish between functional (vasospastic) and organic (obstructive) components in occlusive peripheral vascular disease. The resultant increase in blood flow likewise provides an index of the initial vasospasm and the degree to which a decrease in normal vascular tone will augment blood flow in ischemic tissues; however, such information cannot be used to forejudge the possible results to be accomplished by sympathectomy.

Tolazoline hydrochloride is as effective orally as it is parenterally, except for the time of onset and maximum response. When administered orally, maximal vasodilation occurs in 45 to 100 minutes; intramuscular injection produces maximal response in 30 to 60 minutes. This vasodilating action usually persists for several hours. Although the drug has relatively low toxicity, its use is accompanied by various side-effects. Flushing, goose flesh, formication, and a sensation of chilliness or warmth usually occur at the beginning of treatment, but their incidence usually decreases as administration is continued. Tachycardia, tingling, nausea, and epigastric distress may occur occasionally. Vomiting or diarrhea may be encountered rarely. A slight hypotensive effect occasionally may be accompanied by postural hypotension; a slight rise in blood pressure is also possible. Gastric symptoms may be controlled readily by the use of an antacid or by prescribing oral medication after meals. Parasympathomimetic agents may be employed to counteract effects of the drug on the lower digestive tract. Intra-arterial administration is associated with a feeling of warmth or even a burning sensation throughout the treated limb. Minimal side-effects of arterial injection include flushing and piloerection, transient postural vertigo, and slight tachycardia; the first two effects are used as criteria for the most effective dosage by that route. A paradoxical further decrease in blood supply is observed rarely in gangrene, but this usually disappears with continued treatment or can be obviated by preliminary administration of histamine. Damage to diseased arteries or to periarterial tissues has not been reported even with prolonged treatment by the intra-arterial route. Such treatment may be employed concomitantly with anticoagulant therapy when the latter is indicated.

The effectiveness of tolazoline is enhanced by keeping the patient warm. Exposure to a cold environment should be avoided during treatment since this may result in increased heat loss from vasodilatation and further damage to involved tissues. Because the drug stimulates gastric secretion of hydrochloric acid, it should be administered with extreme caution to patients with a history of peptic ulcer or gastritis. The drug should be given cautiously to patients with coronary artery disease because of its variable hypotensive effect. Further special care is required during intra-arterial administration to patients in whom excessively rapid injection may produce cardiac symptoms.

Dosage.—Tolazoline hydrochloride is administered either orally or parenterally by subcutaneous, intramuscular, intravenous, or intra-arterial injection. The oral route, either alone or in conjunction with parenteral therapy, is preferred when prolonged treatment is necessary. The most effective dosage is reached at or just below the point when the skin becomes flushed and the patient experiences a feeling of chilliness; therefore, the dosage must be carefully individualized and adjusted in accordance with the optimal vasodilation and side-effects. The usual initial oral dose for adults is 25 mg. four to six times daily; this may be increased gradually to obtain the desired response. The usual parenteral dose for adults ranges from 25 to 75 mg. injected four times daily, with the patient under close observation. A cutaneous sensation of crawling, chilliness with resultant goose flesh, or a feeling of warmth indicate when effective dosage has been reached. Intravenous injection of as much as 200 mg. (in three divided doses of 50, 50, and 100 mg.) within a period of two hours has been administered in some instances.

Intra-arterial injection should be carried out only by those experienced in the procedure, preferably in a hospital or clinic, and then usually only after the maximum benefit from administration of the drug by other routes has been tried. Injection is made into the femoral, brachial, or radial artery. For adults, an initial test dose of 25 mg. should be administered slowly for the first injection to determine the response of the individual patient. The subsequent average dose ranges from 50 to 75 mg., administered once or twice daily at the outset. This dosage may be reduced later to two or three times weekly to sustain improvement and may be employed in conjunction with oral therapy to maintain vasodilatation between injections.

With continued therapy, a cumulative vasodilating effect has been observed, which may sustain blood flow in peripheral vessels at comparatively high levels. This effect is attributed to the promoting of the development of collateral circulation and reestablishment of functioning channels.

Tests and Standards.—

Physical Properties: Tolazoline hydrochloride is a white or slightly off-white, bitter powder with a slight aromatic odor, m.p. 173.0-176.0°. It is freely soluble in alcohol, chloroform, and water; and very slightly soluble in ether and ethyl acetate. The pH of the 2.5% solution is 4.9-5.3.

Identity Tests: Dissolve about 0.1 gm. of tolazoline hydrochloride in 10 ml. of water and divide the solution into two portions. To one portion add 2 drops of nitric acid and 1 ml. of silver nitrate T.S.: a white precipitate forms, which is insoluble in diluted nitric acid, but soluble in diluted ammonia solution *(presence of chloride)*. To the second portion add 6 ml. of saturated picric acid and place the mixture in a refrigerator for 30 min. Filter the mixture, wash the precipitate thoroughly with ether, and dry it at 105° for 15 min.: the crystals melt at 145.0-149.0°. *(Caution! May be explosive. Use safety glass shield.)*

Purity Tests: Dissolve 0.1 gm. of tolazoline hydrochloride in enough water to make 25 ml. of solution, add 1 ml. of barium chloride T.S., shake, and allow the mixture to stand for one min.: the turbidity does not exceed that of 0.2 ml. of 0.02 *N* sulfuric acid diluted to 25 ml. and treated in the same manner *(presence of sulfate)*.

Dry about 1 gm. of tolazoline hydrochloride, accurately weighed, at 60° in a vacuum for four hours: the loss in weight does not exceed 0.5%.

Char about 1 gm. of tolazoline hydrochloride, accurately weighed, cool the residue, add 1 ml. of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.1%.

Assay: (Tolazoline) Transfer to a 125 ml. separatory funnel about 0.25 gm. of tolazoline hydrochloride, accurately weighed. Add 10 ml. of water and 15 ml. of sodium hydroxide T.S., previously saturated with sodium chloride, and mix. Extract the liberated base with six 20 ml. portions of ether. Wash the combined ether extracts with two 10 ml. portions of water. Extract the combined water washings with 15 ml. of ether and add this to the combined ether extracts. Evaporate the ether to about 10 ml. on a steam bath. Add 30 ml. of 0.05 *N* sulfuric acid, accurately measured, and warm gently until the remainder of the ether is expelled. Cool and titrate the solution with 0.05 *N* sodium hydroxide, using methyl red T.S. as an indicator. Each milliliter of 0.05 *N* acid consumed is equivalent to 0.008011 gm. of tolazoline and 0.009834 gm. of tolazoline hydrochloride. The amount of tolazoline is not less than 79.8 nor more than 83.1%, equivalent to not less than 98.0 nor more than 102.0% of tolazoline hydrochloride.

(Chloride) Transfer to a 100 ml. volumetric flask about 0.5 gm. of tolazoline hydrochloride, accurately weighed. Add 25 ml. of water and 3 ml. of nitric acid, and mix. Add 50 ml. of 0.1 *N* silver nitrate, accurately measured, and fill to the mark with water. Shake the mixture vigorously and filter it through a dry filter paper. Transfer 50 ml. of the filtrate, accurately measured, to a 125 ml. Erlenmeyer flask and titrate the excess silver nitrate with 0.1 *N* ammonium thiocyanate, using ferric ammonium sulfate T.S. as an indicator. Each milliliter of 0.1 *N* silver nitrate consumed is equivalent to 0.003546 gm. of chloride and 0.01967 gm. of tolazoline hydrochloride. The amount of chloride is not less than 17.7 nor more than 18.4%, equivalent to not less than 98.0 nor more than 102.0% of tolazoline hydrochloride.

Dosage Forms of Tolazoline Hydrochloride

ELIXIR. *Identity Tests:* To an amount of elixir equivalent to about 50 mg. of tolazoline hydrochloride add 2 drops of nitric acid and 1 ml. of silver nitrate T.S.: a white precipitate forms, which is insoluble in diluted nitric acid, but soluble in diluted ammonia solution *(presence of chloride).*

To the amount of elixir equivalent to about 0.15 gm. of tolazoline hydrochloride add 18 ml. of saturated picric acid. Place the mixture in a refrigerator for 30 min. Filter the mixture, wash the precipitate with cold water until the washings are colorless, and then wash it thoroughly with ether. Dry the precipitate at 105° for 15 min.: the crystals melt at 145.0-149.0°. *(Caution! May be explosive. Use safety glass shield.)*

Assay: (Tolazoline) Transfer to a 125 ml. separatory funnel an amount of elixir, accurately measured, equivalent to about 0.25 gm. of tolazoline hydrochloride. Add 15 ml. of sodium hydroxide T.S., previously saturated with sodium chloride, and mix. Proceed as directed in the assay for tolazoline in the monograph for tolazoline hydrochloride starting with, "Extract the liberated base . . ." Each milliliter of 0.05 *N* sulfuric acid consumed is equivalent to 0.009834 gm. of tolazoline hydrochloride. The amount of tolazoline hydrochloride is not less than 90.0 nor more than 110.0% of the labeled amount.

(Alcohol) To 50 ml. of elixir add 50 ml. of water and 50 ml. of diluted sulfuric acid, and on the solution run a *U.S.P. alcohol determination.* The amount of alcohol is not less than 92.0 nor more than 108.0% of the labeled amount.

SOLUTION. *Physical Properties:* The pH of the 2.5% solution is 3.8-4.2.

Identity Tests: Cautiously evaporate over a free flame an amount of solution equivalent to about 0.3 gm. of tolazoline hydrochloride. The residue responds to the identity tests for the active ingredient in the monograph for tolazoline hydrochloride.

Assay: (Tolazoline) Transfer to a 125 ml. separatory funnel an amount of solution, accurately measured, equivalent to about 0.25 gm. of tolazoline hydrochloride. Add 15 ml. of sodium hydroxide T.S., previously saturated with sodium chloride, and mix. Proceed as directed in the assay for tolazoline in the monograph for tolazoline hydrochloride starting with, "Extract the liberated base . . ." Each milliliter of 0.05 *N* sulfuric acid consumed is equivalent to 0.009834 gm. of tolazoline hydrochloride. The amount of tolazoline hydrochloride is not less than 95.0 nor more than 105.0% of the labeled amount.

TABLETS. *Identity Tests:* Grind a number of tablets equivalent to about 0.3 gm. of totazoline hydrochloride and triurate the powder with three 20 ml. portions of alcohol. Filter the alcohol extracts and evaporate the filtrate to dryness on a steam bath. The residue responds to the identity tests for the active ingredient in the monograph for tolazoline hydrochloride.

Assay: (Tolazoline) Weigh 20 tablets and powder them. Transfer to a 125 ml. separatory funnel an amount of powder, accurately weighed, equivalent to about 0.25 gm. of tolazoline hydrochloride. Add 15 ml. of water and 15 ml. of sodium hydroxide T.S., previously saturated with sodium chloride, and mix. Proceed as directed in the assay for tolazoline in the monograph for tolazoline hydrochloride starting with, "Extract the liberated base . . ." Each milliliter of 0.05 *N* sulfuric acid consumed is equivalent to 0.009834 gm. of tolazoline hydrochloride. The amount of tolazoline hydrochloride is not less than 95.0 nor more than 105.0% of the labeled amount.

Ciba Pharmaceutical Products, Inc., Summit, N. J.

Elixir Priscoline Hydrochloride: 473 cc. bottles. A flavored elixir containing 6.25 mg. of tolazoline hydrochloride in each cubic centimeter.

Solution Priscoline Hydrochloride: 10 cc. vials. A solution containing 25 mg. of tolazoline hydrochloride in each cubic centimeter. Preserved with 0.5% chlorobutanol.

Tablets Priscoline Hydrochloride: 25 mg. U. S. patent 2,161,938.

Mephenesin (See New and Nonofficial Remedies 1953, p. 466).

The Evron Company, Chicago.

Tablets Daserol: 0.25 and 0.5 gm.

Oleovitamin A-U.S.P. (See New and Nonofficial Remedies 1953, p. 483).

Endo Products, Inc., Richmond Hill, N. Y.

Acon Vitamin A Drops: 30 cc. bottles. A flavored solution containing 25,000 U.S.P. units of vitamin A palmitate in each cubic centimeter. Preserved with 0.18% methylparaben and 0.02% propylparaben. U. S. trademark 538,867.

Penicillin for Oral or Sublingual Administration (See New and Nonofficial Remedies 1953, p. 133).

Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Tablets Potassium Penicillin G (Buffered): 500,000 and 1,000,000 units. Buffered with calcium carbonate.

Phenacemide (See New and Nonofficial Remedies 1953, p. 267).

Abbott Laboratories, North Chicago, Ill.

Enterab Tablets Phenurone: 0.3 gm. U. S. trademark 522,257.

Polyethylene Glycol (See New and Nonofficial Remedies 1953, p. 451).

Carbide & Carbon Chemicals Company, Division of Union Carbide & Carbon Corporation, New York.

Carbowax 400: 226.8 gm. bottles.

Carbowax 1000: 226.8 gm. jars. U. S. trademark 380,450.

Progesterone-U.S.P. (See New and Nonofficial Remedies 1953, p. 376).

The Upjohn Company, Kalamazoo, Mich.

Solution Progesterone in Oil: 10 cc. vials. A solution in cottonseed oil containing 25 mg. of progesterone in each cubic centimeter. Preserved with 0.5% chlorobutanol.

Pyridoxine Hydrochloride (See New and Nonofficial Remedies 1953, p. 493).

Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Tablets Beadox Hydrochloride: 10, 25 and 50 mg.

Pyrilamine Maleate (See New and Nonofficial Remedies 1953, p. 12).

The Evron Company, Chicago.

Tablets Pyrilamine Maleate: 25 mg.

Riboflavin-U.S.P. (See New and Nonofficial Remedies 1953, p. 496).

The Evron Company, Chicago.

Tablets Riboflavin: 5 and 10 mg.

Sulfadiazine-U.S.P. (See New and Nonofficial Remedies 1953, p. 100).

The Evron Company, Chicago.

Tablets Sulfadiazine: 0.5 gm.

Testosterone-U.S.P. (See THE JOURNAL, March 20, 1954, p. 1002).

E. S. Miller Laboratories, Inc., Los Angeles.

Suspension Testrone: 10 cc. vials. A suspension in isotonic saline solution containing 25 or 100 mg. of testosterone in each cubic centimeter. Preserved with 0.01% thimerosal.

Thiamine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1953, p. 498).

The Evron Company, Chicago.

Tablets Thiamine Hydrochloride: 5 and 10 mg.

MEDICAL LICENSURE STATISTICS FOR 1953

FIFTY-SECOND ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Edward L. Turner, M.D., Secretary, and Anne Tipner, Assistant to the Secretary

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This report is the 52nd annual compilation of information and statistics pertaining to medical licensure in the United States and its territories and outlying possessions by the Council on Medical Education and Hospitals of the American Medical Association. The report presents statistics for the medical examining boards of all the states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico. The figures for Connecticut also include data reported by the homeopathic medical examining board of that state. The homeopathic boards in Arkansas, Louisiana, and Maryland, and the eclectic board in Arkansas, had no new licentiates last year.

As in previous years, data are included pertaining to the National Board of Medical Examiners and the 21 boards of examiners in the basic sciences.

The compilations included in this study were obtained from official reports. The Council and THE JOURNAL express their appreciation to the officers of the examining and licensing agencies for these data and for other records furnished throughout the year to the office of the Council.

The tables referring to medical licensure include figures for the number of candidates examined for medical licensure in 1953 and also for those licensed on the basis of reciprocity or endorsement of credentials. Other data are also included pertaining to the regulations for medical licensure both of physicians who secured their professional training in the United States and Canada and of physicians educated in other countries. The state boards are discussed first, followed by the basic science boards and the National Board of Medical Examiners.

STATE BOARDS OF MEDICAL EXAMINERS

Licenses Issued

During 1953 there were 14,434 licenses to practice medicine issued by the medical examining boards of the 48 states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico. The number licensed in each state, by examination or by endorsement of credentials, is shown in table 1. Of the 14,434 licenses issued, 6,565 were granted after written examination and 7,869 by reciprocity or endorsement of state licenses or the certificate of the National Board of Medical Examiners.

It does not follow that all physicians certified after examination were tested in a given year. The licensing boards of 26 states, the District of Columbia, Alaska,

TABLE 1.—*Licenses Issued, 1953*

	Examination	On the Basis of Reciprocity and Endorsement	Total
Alabama	55	92	147
Arizona	12	96	108
Arkansas	81	39	120
California	540	1,437	1,977
Colorado	90	143	233
Connecticut	21	214	235
Delaware	24	19	43
District of Columbia	13	165	178
Florida	340	0	340
Georgia	172	113	285
Idaho	6	43	49
Illinois	547	219	766
Indiana	162	144	306
Iowa	97	86	183
Kansas	217	86	303
Kentucky	17	91	108
Louisiana	226	70	296
Maine	25	50	75
Maryland	203	207	410
Massachusetts	39	353	392
Michigan	228	189	417
Minnesota	210	154	364
Mississippi	84	67	151
Missouri	268	114	382
Montana	4	43	47
Nebraska	83	45	128
Nevada	3	15	18
New Hampshire	7	39	46
New Jersey	48	319	367
New Mexico	6	54	60
New York	338	1,010	1,348
North Carolina	181	147	328
North Dakota	24	18	42
Ohio	401	398	799
Oklahoma	53	57	110
Oregon	60	90	150
Pennsylvania	326	340	666
Rhode Island	31	27	58
South Carolina	71	69	140
South Dakota	10	21	31
Tennessee	182	94	276
Texas	403	232	635
Utah	25	53	78
Vermont	3	32	35
Virginia	185	139	324
Washington	60	161	221
West Virginia	45	79	124
Wisconsin	284	103	387
Wyoming	1	28	29
Alaska	2	11	13
Canal Zone	1	1	2
Guam	0	4	4
Hawaii	19	14	33
Puerto Rico	32	35	67
Totals	6,565	7,869	14,434

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. of Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F
	ALABAMA																																											
1	Medical College of Alabama, Birmingham	44	0					1	0									4	0																							1	0		
	ARKANSAS																																											
2	University of Arkansas School of Medicine, Little Rock					77	0											5	0					0	1																		
	CALIFORNIA																																										
3	Coll. of Medical Evangelists, Loma Linda-Los Angeles					1	0	91	0	2	0							2	1							1	0									0	1	1	0			2	0		
4	Univ. of So. California School of Med., Los Angeles			1	0			75	1																							1	0	1	0								
5	Stanford University School of Medicine, Stanford-San Francisco							65	0															1	0									1	0			3	0			1	0
6	Univ. of California School of Medicine, San Francisco							70	1																															1	0		
	COLORADO																																										
7	University of Colorado School of Medicine, Denver							2	0	71	0					1	0	1	0			1	0											1	0							1	0
	CONNECTICUT																																										
8	Yale University School of Medicine, New Haven							1	0									1	2							3	0																
	DISTRICT OF COLUMBIA																																										
9	Georgetown University School of Med., Washington																	5	1					1	0	1	0									1	0						
10	George Washington University School of Medicine, Washington							1	0									6	2													1	0	1	0							1	0
11	Howard University College of Medicine, Washington							4	0			0	1	1	0	6	1			1	0			2	0									1	0			21	2			1	0
	GEORGIA																																										
12	Emory University School of Medicine, Atlanta																	27	3	7	0													1	0								
13	Medical College of Georgia, Augusta																	8	11	8	0																						
	ILLINOIS																																										
14	Chicago Medical School							2	0									2	3					4	0																		
15	Northwestern University Medical School, Chicago							5	0	8	0							7	3			1	0	57	2	1	0	2	0	2	0	1	0	3	0			5	0	10	0		
16	Stritch School of Med. of Loyola University, Chicago							8	0	4	0	2	0					2	1					46	1	5	0													3	0	2	0
17	University of Chicago, The School of Medicine							10	0	1	0					1	0	1	0					23	1			1	0	2	0			4	0			2	0	1	0	3	0	2	0
18	University of Illinois College of Medicine, Chicago			2	0			21	0	2	0							11	5					131	13	2	0	1	0	1	0			1	0	1	0	4	0	4	0	8	0
	INDIANA																																										
19	Indiana University School of Medicine, Bloomington-Indianapolis							1	0									10	3					2	0	134	0																
	IOWA																																										
20	State University of Iowa College of Med., Iowa City							5	0									1	1					2	0	1	0	87	0					1	0	1	0					5	0
	KANSAS																																										
21	University of Kansas School of Medicine, Lawrence-Kansas City																							1	1	1	0			102	1											2	0
	KENTUCKY																																										
22	University of Louisville School of Med., Louisville							3	0									10	5					0	1							98	0									1	0
	LOUISIANA																																										
23	Louisiana State Univ. School of Med., New Orleans							1	0									3	1	1	0													101	0							1	0
24	Tulane University of Louisiana School of Medicine, New Orleans	1	0															14	5					2	1							1	0	95	0			1	0				
	MARYLAND																																										
25	Johns Hopkins University School of Med., Baltimore					1	0	3	0	1	0							4	1					2	1													64	0			2	0
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore							1	0					4	0			7	2															1	0			90	0				
	MASSACHUSETTS																																										
27	Boston University School of Medicine							2	0									1	2			1	0	1	1																	1	0		
28	Harvard Medical School, Boston	1	0					4	0					1	0			10	1					1	0							1	0					1	0	1	0	2	0
29	Tufts College Medical School, Boston									1	0							3	5					1	0	2	0					1	0	1	0					1	1		
	MICHIGAN																																										
30	University of Michigan Medical School, Ann Arbor							5	0									3	2					1	0											1	0			1	0	1	2	2	0	1	0
31	Wayne University College of Medicine, Detroit							1	0									4	2					2	1															0	1	6	3	0	
	MINNESOTA																																										
32	University of Minnesota Medical School, Minneapolis							2	0									4	1					3	0																			9	9	0	
	MISSOURI																																										
33	St. Louis University School of Medicine							3	0			1	0					9	4					3	1									1	0							4	0		
34	Washington University School of Medicine, St. Louis							2	0									5	2					1	0																	2	0		
	NEBRASKA																																										
35	Creighton University School of Medicine, Omaha			1	0			8	0	2	0					1	0											22	0	3	0			1	0							1	0
36	University of Nebraska College of Medicine, Omaha							2	0									1	2					4	1			1	0														
	NEW YORK																																										
37	Albany Medical College																	3	2	1	0					1	0																
38	University of Buffalo School of Medicine							1	0									4	0																								
39	Columbia University College of Physicians and Surgeons, New York							1	0			1	0					4	3	1	0																	2	0	1	0	1	0		
40	Cornell University Medical College, New York	1	0					1	0									9	2	1	0													1	0					2	0	1	0		
41	New York Medical College, Flower and Fifth Avenue Hospitals							3	0			1	1					2	2					1	0									1	0								
42	New York University College of Medicine							1	0			1	0					5	2																	1	0	1	0	1	0				
43	State University of New York College of Medicine at New York City, Brooklyn					1	0	1	0					1	0			4	2					1	0	1	0													1	0	1	0		
44	Univ. of Rochester School of Medicine and Dentistry							3	0			1	0					2	0					2	0									1	0			2	0	2	0	1	0		
45	State Univ. of New York at Syracuse College of Med.							1	0									5	1																							1	0		
	NORTH CAROLINA																																										
46	Duke University School of Medicine, Durham																	14	4	3	0													3	0			1	0				
47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem																	2	2																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	32	43	44	45	46	47	48	49	50						
Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska, Canal Zone, Guam, Hawaii, Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
5 0																		1 0										56	56	0	0.0	6	1
	1 0							1 1											1 0						1 0		1 0	89	87	2	2.2	8	2
1 0 1 0						1 0				1 0						4 0		1 0					3 0		1 0			115	113	2	1.7	16	3
																												79	78	1	1.3	4	4
																												71	71	0	0.0	5	5
																												72	71	1	1.4	2	6
1 0 4 0								1 0		1 0							1 0							1 0				87	87	0	0.0	13	7
					1 0														1 0									9	7	2	22.2	5	8
								1 0 1 0						1 0														12	11	1	8.3	7	9
									2 0		1 0								1 0 1 0								0 1	18	15	3	16.7	10	10
7 1						3 0		8 2 4 0						1 0		1 0						6 1		1 0		3 0		73	65	8	11.0	18	11
									2 0																			103	100	3	2.9	4	12
																												100	89	11	11.0	2	13
							1 0	1 0																				13	10	3	23.1	5	14
4 0 3 0						1 0		3 1		1 0 3 0			2 0				1 0 2 1		3 0 4 0				3 0 1 0	6 0		1 0		147	140	7	4.8	27	15
									1 0 8 0			1 0 1 0												9 0		1 0		95	93	2	2.1	14	16
								4 0		1 0 3 0				1 0			1 0						1 0		1 0			64	63	1	1.6	19	17
1 0									1 0		2 0 1 0							2 0 2 0					2 0					218	200	18	8.2	20	18
								1 0					1 0 1 0												2 0		2 0	158	155	3	1.9	10	19
4 0							1 0			1 0														3 0	1 0	2 0		116	115	1	0.9	14	20
3 0								1 0																				112	110	2	1.8	6	21
								2 0									1 0										5 0	126	120	6	4.7	8	22
5 0																												113	112	1	0.8	6	23
2 0 1 0								2 0 1 0						1 0		1 0		1 0 1 0						1 0		2 0		153	147	6	3.9	16	24
3 0					1 0				1 0					1 0					1 0				1 0		1 0		1 0	89	87	2	2.2	15	25
									6 0		1 0		1 0 2 0						1 0				2 0				1 1	120	117	3	2.5	12	26
1 0																			1 0									11	8	3	27.3	7	27
6 0 2 0		1 0		1 0					7 0		1 0		1 0					1 0 2 0					2 0			1 0	48	47	1	2.1	20	28
																			3 0									19	13	6	31.6	8	29
											1 0		2 0 1 0														1 0	151	149	2	1.3	11	30
1 0								1 0																				76	72	4	5.3	7	31
							1 0			3 0													1 0		1 0		1 0	116	115	1	0.9	9	32
112 0								2 0		1 0 1 0				2 0 1 0														145	140	5	3.4	12	33
1 0 8 3 0				1 0				4 0 4 0						1 0													1 0	107	105	2	1.9	11	34
24 0 1 0 5 0							1 0	1 0											1 0				1 0					73	73	0	0.0	15	35
76 1																		1 0							1 0			90	86	4	4.4	7	36
								1 0																				8	6	2	25.0	4	37
														1 0					1 0									7	7	0	0.0	4	38
1 0					1 0			5 2 2 0		2 0		1 0				1 0			2 0					1 0				32	27	5	15.6	16	39
								7 0		1 0				1 0									1 0 1 0				1 0	30	28	2	6.7	13	40
								3 2 1 0						1 0					1 0									19	14	5	26.3	9	41
						1 0		7 4 1 0						1 0				1 0										27	21	6	22.2	11	42
								4 1						1 0					1 0 1 0									21	18	3	14.3	12	43
								10 1 4 0		3 0				1 0										1 0 2 0		1 0	1 0	38	37	1	2.6	16	44
													1 0														1 0	10	9	1	10.0	5	45
								1 0 47 0		1 0				1 0		1 0			2 0									78	74	4	5.1	10	46
1 0									49 0																			54	52	2	3.7	3	47
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. of Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F
	OHIO																																												
48	University of Cincinnati College of Medicine																	4	4					4	0																				
49	Western Reserve University School of Med., Cleveland											1	0					3	1																							1	0		
50	Ohio State University College of Medicine, Columbus																	7	5																										
	OKLAHOMA																																												
51	Univ. of Oklahoma School of Med., Oklahoma City																	0	3													2	0												
	OREGON																																												
52	University of Oregon Medical School, Portland							14	0	2	0											1	0	1	0			3	0					1	0					1	0	2	0	8	0
	PENNSYLVANIA																																												
53	Hahnemann Med. Coll. and Hospital of Philadelphia	2	0					1	0					1	0	1	0	7	6			1	0	1	1													1	0	2	1				
54	Jefferson Medical College of Philadelphia							3	0	1	0	2	0	2	0			7	3					2	0					1	0	1	0	1	0	2	0			1	0	2	0
55	Temple University School of Medicine, Philadelphia							3	0	2	0			7	0			9	3																										
56	Univ. of Pennsylvania School of Med., Philadelphia	4	0					3	0	1	0			3	0			3	2					2	0	1	0			2	0	1	0					5	0			1	0	3	0
57	Woman's Medical Coll. of Pennsylvania, Philadelphia							2	0															1	0									1	0										
58	University of Pittsburgh School of Medicine							2	0									9	2					1	0									1	0							2	0	1	0
	SOUTH CAROLINA																																												
59	Medical College of South Carolina, Charleston																	5	1																										
	TENNESSEE																																												
60	University of Tennessee College of Med., Memphis			1	0			1	0					1	0			11	2					1	0							2	0							1	0	3	0
61	Meharry Medical College, Nashville	2	0					1	0									3	0	3	0			4	2					1	0	1	0	1	0			2	2			1	0
62	Vanderbilt University School of Medicine, Nashville																	9	3					1	0							2	0										
	TEXAS																																												
63	Southwestern Medical School of the University of Texas, Dallas			1	0			3	0																																		
64	University of Texas School of Medicine, Galveston																	3	0																									1	0
65	Baylor University College of Medicine, Houston																							4	0																				
	UTAH																																												
66	Univ. of Utah School of Medicine, Salt Lake City			2	0			4	0											1	0			3	0																			1	0
	VERMONT																																												
67	University of Vermont College of Med., Burlington																																												
	VIRGINIA																																												
68	University of Virginia Dept. of Med., Charlottesville													1	0			4	2																										
69	Medical College of Virginia, Richmond			1	0			1	0									6	1																										
	WASHINGTON																																												
70	University of Washington School of Med., Seattle							6	0			2	0											1	0			1	0																2	0
	WISCONSIN																																												
71	University of Wisconsin Medical School, Madison			1	0			10	0	1	0	1	0							1	0			4	1	1	0																2	0
72	Marquette University School of Medicine, Milwaukee			1	0	1	0	6	0	1	0							2	2					2	0									1	0							5	0	5	0
	CANADA																																												
73	University of Alberta Faculty of Med., Edmonton							3	0															1	0																				1	0
74	University of Manitoba Faculty of Med., Winnipeg							4	0											1	0	1	0	1	0									1	0			1	0	1	0	1	0	6	0
75	Dalhousie University Faculty of Medicine, Halifax																	1	0					1	0											1	0	2	0						
76	Queen's University Faculty of Medicine, Kingston																							2	0															1	0	1	0			2	0
77	University of Ottawa Faculty of Medicine																									1	0									1	0								
78	Univ. of Western Ontario Faculty of Med., London							2	0															1	0																			2	0	1	0
79	University of Toronto Faculty of Medicine							3	0									2	0					1	0	1	0											1	0	1	0	1	0	1	0
80	McGill University Faculty of Medicine, Montreal							4	0			2	1			1	0	0	2					2	0											1	0	1	0	2	0				
81	University of Montreal Faculty of Medicine																																											1	0
82	Laval University Faculty of Medicine, Quebec																	1	0																									1	0
	OTHERS																																												
83	Foreign medical faculties	1	0	1	0			95	53	1	0	21	18	1	0	2	1	11	4	6	0			208	203	0	1	10	0					1	0	13	7	30	15	10	14	15	0	23	0
84	Extinct medical schools																	3	6																			1	0						1	0
85	Unapproved medical schools																	5	9	1	0																					2	31		
86	Schools of osteopathy									8	1	2	4	1	0											5	0															0	3		
87	TOTALS	56		12		81		637		110		63		24		15		492		172		6		777		163		128		118		119		227		33		253		90		251		210	
88	Totals—Examined—Passed	56		12		81		582		109		38		24		13		340		172		6		544		162		128		117		119		227		25		234		39		251		210	
89	Totals—Examined—Failed	0		0		0		55		1		25		0		2		152		0		0		233		1		0		1		0		0		8		19		51		0		0	
90	Percentage failed	0.0		0.0		0.0		8.6		0.9		39.6		0.0		13.3		30.8		0.0		0.0		29.9		0.6		0.0		0.8		0.0		0.0		24.2		7.5		56.7		0.0		0.0	
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22	

P—Passed; F—Failed.

Canal Zone, Hawaii, Puerto Rico, and Guam require a year of internship as a prerequisite for licensure. A number of the boards permit the candidate for medical licensure to take the written examination before completion of of the internship, and, if he is successful, the license is issued and dated on completion of the internship requirement. Licenses are also withheld in some states for other technicalities. As a rule, the licenses of those examined in December are dated and issued in the following year. The figures in table 1 will, therefore, not correspond with those in succeeding tables, which deal entirely with physicians examined for licensure in 1953, but they do include persons who may have been licensed in more than one state in a given year. In tables 12, 13, and 14

23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						
Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska, Canal Zone, Guam, Hawaii, Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
.. ..								4 1	2 0	.. ..	85 0	.. ..	1 0	.. ..					1 0	2 0	1 0	.. ..	109	104	5	4.6	9	48
.. ..								.. ..	3 0	.. ..	73 0	.. ..								.. ..	82	81	1	1.2	5	49
.. ..								8 0	.. ..	.. ..	84 0	.. ..								2 0	106	101	5	4.7	4	50
.. ..								1 0	.. ..							

and possessions, Puerto Rico licensed 67, Hawaii 33, Alaska 13, Guam 4, and the Canal Zone 2. There was an increase of 1,206 in the total number of licenses issued in 1953 as compared with the previous year. This increase included an additional 353 issued by examination and 853 by reciprocity or endorsement of credentials. In the descriptive data reference is made to the total number of boards for which figures are reported. The figures include the examining and licensing boards in the territories and possessions and also the homeopathic board of Connecticut.

Totals of the physicians licensed for 18 previous years and for 1953, both by examination and reciprocity or endorsement of credentials, are included in table 3. The variations shown for the years from 1936 to 1941, inclusive, were due to the increase in the licensure of foreign-trained physicians. The increases in recent years resulted from the increase in the production of physicians, the mobility of physicians, and the licensure of foreign-trained physicians.

TABLE 3.—*Licenses Issued, 1935-1953*

Year	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,276	2,773	9,049
1937	6,629	3,205	9,834
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,866	9,155
1941	6,057	2,762	8,819
1942	6,152	2,469	8,621
1943	6,062	2,340	8,402
1944	7,080	2,596	9,676
1945	5,580	3,622	9,202
1946	6,567	9,669	16,236
1947	6,763	7,701	14,464
1948	5,997	7,595	13,592
1949	5,252	6,929	12,181
1950	5,454	6,755	12,209
1951	5,713	6,225	11,938
1952	6,212	7,016	13,228
1953	6,565	7,869	14,434
	117,330	90,414	207,744

In 19 years, 1935 to 1953, the number of medical licenses issued in the United States totaled 207,744, of which 117,330 were issued after written examination and 90,414 by endorsement of credentials.

Candidates Examined by Medical Examining Boards

Compilations referring to those examined for medical licensure in 1953 by individual state medical examining boards, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico, and the Canal Zone, indicating the number who passed and failed in each state, the medical school of graduation, and the percentage of failures for each school, as well as each licensing board and the number of states in which graduates of a given school were examined, are recorded in table 2. Medical schools in the United States that are no longer in operation, unapproved medical schools in the United States, foreign faculties of medicine, and schools of osteopathy are not listed by name, but the numbers examined in each state in these four categories are included following those for existing medical schools in the United States and Canada.

During 1953 there were 7,525 applicants for licensure by written examination, of whom 6,543 passed and 982, or 13.0%, failed. The candidates examined represented 72 approved medical schools in the United States, 10 approved medical schools of Canada, 2 approved medical schools in the United States no longer operating, 175 faculties of medicine and 7 licensing corporations of foreign countries, 5 unapproved medical schools in the United States that are no longer in existence, and 7 schools of osteopathy. Osteopaths who were granted the privilege to practice medicine, surgery, or both by medical examining boards are included in these statistics.

TABLE 4.—*Source of Candidates Examined for Licensure in the United States, 1953*

Medical Schools	Number of Schools	Number Examined	Number Passed	Number Failed	Percentage Failed
Approved schools in United States	72	5,646	5,428	218	3.8
Approved in Canada	10	121	116	5	4.1
Extinct	2	12	6	6	50.0
Foreign	182	1,463	796	667	45.5
Unapproved schools	5	67	20	47	70.2
Schools of osteopathy	7	216	177	39	18.4
		7,525	6,543	982	13.0

TABLE 5.—*Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1953*

	Examined	Passed	Failed
California	16	16	0
Connecticut	3	2	1
District of Columbia	1	1	0
Florida	6	4	2
Georgia	1	1	0
Idaho	1	1	0
Illinois	9	9	0
Indiana	2	2	0
Louisiana	1	1	0
Maine	3	3	0
Maryland	6	6	0
Massachusetts	5	5	0
Michigan	4	4	0
Minnesota	13	13	0
Mississippi	4	4	0
Missouri	1	1	0
New Jersey	1	1	0
New York	4	4	0
North Carolina	6	6	0
North Dakota	10	10	0
Ohio	2	2	0
Oregon	2	2	0
Pennsylvania	6	6	0
Rhode Island	3	3	0
Texas	2	1	1
Utah	3	3	0
Virginia	1	0	1
Washington	1	1	0
Wisconsin	2	2	0
Hawaii	1	1	0
Puerto Rico	1	1	0
Totals	121	116	5

Osteopaths who obtain the legal right to special practice by other than medical examining boards are not included in these compilations.

Examination and reciprocity meetings are scheduled at frequent intervals by licensing boards in most of the states to facilitate licensure and enable physicians to commence the practice of medicine without undue delay. Later in this study there is included a tabulation giving

the schedules for all states. The publication of the dates of examinations and reciprocity or endorsement meetings is a regular biweekly feature of THE JOURNAL.

The 7,525 examinees (table 4) included 5,646 graduates of approved medical schools in the United States, of whom 3.8% failed; 121 graduates of approved medical schools in Canada; 4.1% of whom failed; 12 graduates of medical schools in the United States that are now extinct, with 50.0% failures; 1,463 graduates of faculties of medicine located in countries other than the United States and Canada, 45.5% of whom failed; 67 graduates of unapproved medical schools in the United States no longer in existence, with 70.2% failures; and 216 graduates of schools of osteopathy, with 13.4% failures.

As in table 1, the 7,525 physicians and others examined do not represent an equal number of persons, since a candidate tested in more than one state in a calendar year is counted in each state; however, if a candidate failed more than once in a given state within the year, he is counted in that state as a single failure. Figures that show the number of individual licentiates added to the medical profession in 1953 are given in tables 12, 13, and 14.

The greatest number of graduates of any one school examined was 218, representing a state university, the University of Illinois College of Medicine. Of the graduates of this school, 144 were tested in Illinois and 74 in 19 other states. The greatest number examined from a private school was 168, representing Jefferson Medical College; they were tested in 26 states, including 95 who were examined in Pennsylvania, where the school is located. Twenty-two other schools had more than 100 of their graduates examined for medical licensure in 1953 as follows:

State and Municipal Schools	No. of Examinees	No. of States in Which Examinations Were Taken
Indiana University	158	10
State University of Iowa	116	14
University of Kansas	112	6
University of Louisville	126	8
Louisiana State University	113	6
University of Maryland	120	12
University of Michigan	151	11
University of Minnesota	116	9
University of Cincinnati	109	9
Ohio State University	106	4
University of Tennessee	175	12
Southwestern Medical School	110	7
University of Texas	140	3
Medical College of Virginia	118	8
Private Medical Schools		
College of Medical Evangelists	115	16
Emory University	103	4
Northwestern University	147	27
Tulane University	153	16
St. Louis University	145	12
Washington University	107	11
University of Pennsylvania	126	23
University of Pittsburgh	105	14
Marquette University	102	19

Yale University, with 9 examinees, Albany Medical College with 8, the University of Buffalo with 7, and the University of Oklahoma with 6 examinees represented schools with the fewest number of applicants for medical licensure by written examination before state boards.

Nine schools in the United States had no failures among their graduates in medical licensing examinations in 1953. These schools were:

	No. of Examinees	No. of States in Which Examinations Were Taken
Medical College of Alabama	56	6
Stanford University	71	5
University of Colorado	87	13
Creighton University	73	15
University of Buffalo	7	4
Woman's Medical College of Pa	18	6
Baylor University	95	7
University of Utah	26	9
University of Washington	38	8

Thirty-seven of the approved medical schools in the United States had less than 5% failures in state licensure tests and 10 between 5 and 10%. There were 16 schools with 10% or more failures in state examinations. The over-all figures and percentages for failures are modified by including data on those who were examined by the National Board of Medical Examiners in its final examination as well as those who took the examinations of state boards (table 6).

There were 121 graduates of 10 approved medical schools in Canada tested for medical licensure in 1953 in 28 states, the District of Columbia, Hawaii and Puerto Rico. The figures are given for each licensing board by school in table 2 and the numbers examined by each board in table 5. Of the 121 candidates, 116 passed and 5, or 4.1%, failed.

Graduates of foreign faculties of medicine were examined by 36 boards. There were 1,463 examined, of whom 796 passed and 667, or 45.5%, failed. Graduates of five unapproved medical schools were examined by eight states. There were 67 examined, of whom 20 passed and 47, or 70.2%, failed. Graduates of schools of ostopathy were tested in 11 states. Represented were 216 examinees, of whom 177 passed and 39, or 13.4%, failed. Twelve graduates of two medical schools in the United States no longer in operation were examined in four states; of these six passed and six failed. Elsewhere (tables 12, 13, and 14, pages 464 and 465 are given figures referring to actual licentiates and additions to the medical profession.

Consolidated Results of Examinations

In table 6 are presented the combined results of state board examinations and part 3 of the examinations of the National Board of Medical Examiners. This compilation reveals the over-all performance of physicians from individual schools. In some instances, schools having failures before state licensing boards had few, if any, failures in the National Board's final examination. There were 5,646 graduates of approved medical schools in the United States examined by state boards, of whom 218, 3.8% failed. In the same calendar year, 1,974 graduates of these schools appeared for part 3 of the examinations of the National Board, of whom 57, or 2.8%, failed. For both groups the total examined was 7,620, and the percentage of failures was 3.6.

There were 158 graduates of approved medical schools in Canada examined by both state boards and the National Board in 1953; 4.1% failed state board tests, and none failed the National Board's examination.

TABLE 6.—*Combined Results of Examinations of State Boards and the National Board of Medical Examiners, 1953*

School	Results by Medical Examining Board Tests P	F	Part 3 Examination of National Board of Medical Examiners P	F	Total Examined	Totals P	F	Percentage Failed
Medical College of Alabama...	56	0	0	0	56	56	0	0.0
University of Arkansas.....	87	2	0	0	89	87	2	2.2
College of Medical Evangelists	113	2	22	2	139	135	4	2.9
Univ. of Southern California..	78	1	0	0	79	78	1	1.3
Stanford University	71	0	0	0	71	71	0	0.0
University of California.....	71	1	0	0	72	71	1	1.4
University of Colorado.....	87	0	2	0	89	89	0	0.0
Yale University	7	2	64	1	74	71	3	4.1
Georgetown University	11	1	97	5	114	108	6	5.3
George Washington University	15	3	85	3	106	100	6	5.7
Howard University	65	8	17	3	93	82	11	11.8
Emory University	100	3	1	0	104	101	3	2.9
Medical College of Georgia....	89	11	0	0	100	89	11	11.0
Chicago Medical School.....	10	3	63	0	76	73	3	3.9
Northwestern University	140	7	50	0	197	190	7	3.6
Stritch School of Medicine....	93	2	5	0	100	98	2	2.0
University of Chicago.....	63	1	13	1	78	76	2	2.6
University of Illinois.....	200	18	12	1	231	212	19	8.2
Indiana University	155	3	5	0	163	160	3	1.8
State University of Iowa.....	115	1	5	0	121	120	1	0.8
University of Kansas.....	110	2	3	0	115	113	2	1.7
University of Louisville.....	22	6	3	0	31	25	6	19.4
Louisiana State University....	210	1	0	0	211	210	1	0.5
Tulane University	147	6	6	1	160	153	7	4.4
Johns Hopkins University.....	87	2	8	0	97	95	2	2.1
University of Maryland.....	117	3	4	0	124	121	3	2.4
Boston University	8	3	67	2	80	75	5	6.2
Harvard Medical School.....	47	1	125	1	174	172	2	1.1
Tufts College Medical School..	13	6	108	4	131	121	10	7.6
University of Michigan.....	149	2	3	1	155	152	3	1.9
Wayne University	72	4	0	0	76	72	4	5.3
University of Minnesota.....	115	1	17	1	134	132	2	1.5
St. Louis University.....	140	5	6	1	152	146	6	3.9
Washington University	105	2	7	0	114	112	2	1.8
Creighton University	73	0	10	1	84	83	1	1.2
University of Nebraska.....	86	4	1	0	91	87	4	4.4
Albany Medical College.....	6	2	45	0	53	51	2	3.8
State Univ. of N. Y., Brooklyn	18	3	98	2	121	116	5	4.1
University of Buffalo.....	7	0	64	5	76	71	5	6.6
Columbia University	27	5	93	1	126	120	6	4.8
Cornell University	28	2	83	1	114	111	3	2.6
New York Medical College.....	14	5	106	3	128	120	8	6.2
New York University.....	21	6	109	1	137	130	7	5.1
University of Rochester.....	37	1	52	2	92	89	3	3.3
State Univ. of N. Y., Syracuse	9	1	44	0	54	53	1	1.9
Duke University	74	4	61	0	139	135	4	2.9
Bowman-Gray School of Med.	52	2	2	0	56	54	2	3.6
University of Cincinnati.....	104	5	2	0	111	106	5	4.5
Western Reserve University...	81	1	7	0	89	88	1	1.1
Ohio State University.....	101	5	8	1	115	109	6	5.2
University of Oklahoma.....	3	3	3	0	9	6	3	33.3
University of Oregon.....	88	2	7	0	97	95	2	2.1
Hahnemann Medical College..	33	8	74	3	118	107	11	9.3
Jefferson Medical College.....	164	4	22	0	190	186	4	5.1
Temple University	56	3	100	6	165	156	9	5.5
University of Pennsylvania...	123	3	28	0	154	151	3	1.9
Woman's Medical Coll., Penna.	18	0	24	0	42	42	0	0.0
University of Pittsburgh.....	103	2	2	0	107	105	2	1.9
Med. College of South Carolina	62	1	4	0	67	66	1	1.5
University of Tennessee.....	173	2	1	1	177	174	3	1.7
Meharry Medical College.....	61	5	9	1	76	70	6	7.9
Vanderbilt University	52	3	2	0	57	54	3	5.3
Southwestern Medical School..	109	1	0	0	110	109	1	0.9
University of Texas.....	138	2	1	0	141	139	2	1.4
Baylor University	95	0	0	0	95	95	0	0.0
University of Utah.....	26	0	4	0	30	30	0	0.0
University of Vermont.....	14	2	30	1	47	44	3	6.4
University of Virginia.....	80	2	5	0	87	85	2	2.3
Medical College of Virginia...	108	10	7	1	126	115	11	8.7
University of Washington.....	38	0	2	0	40	40	0	0.0
University of Wisconsin.....	81	1	1	0	83	82	1	1.2
Marquette University	97	5	8	0	110	105	5	4.5
Subtotals: U. S. Schools....	5,428	218	1,917	57	7,620	7,345	275	3.6
University of Alberta.....	11	0	0	0	11	11	0	0.0
University of Manitoba.....	29	0	0	0	29	29	0	0.0
Dalhousie University	7	0	1	0	8	8	0	0.0
Queen's University	8	1	1	0	10	9	1	10.0
University of Ottawa.....	3	0	0	0	3	3	0	0.0
University of Western Ontario	11	0	2	0	13	13	0	0.0
University of Toronto.....	18	0	6	0	24	24	0	0.0
McGill University	25	3	26	0	54	51	3	5.6
University of Montreal.....	2	1	1	0	4	3	1	25.0
Laval University	2	0	0	0	2	2	0	0.0
Subtotals: Canadian schools	116	5	37	0	158	153	5	3.2
Extinct medical schools.....	6	6	0	0	12	6	6	50.0
Unapproved medical schools..	20	47	0	0	67	20	47	70.2
Schools of osteopathy.....	177	39	0	0	216	177	39	18.0
Foreign medical faculties.....	796	667	25	3	1,491	821	670	44.8
Totals.....	6,543	982	1,979	60	9,564	8,522	1,042	9.8

The National Board did not examine in 1953 any graduates of an approved medical school no longer in operation. There were also none examined in the unapproved medical school or osteopathic school categories. Twenty-eight graduates of foreign medical faculties were admitted to the National Board's examinations, while 1,463 were examined by state licensing boards. No comparison can be made from the figures in these four groups.

TABLE 7.—*Licensure Failures by Graduates of Existing Approved Medical Schools in the United States Located in the State Where Examined and Elsewhere, 1953*

States With Four Year Medical Schools	Total No. Examined	No. Failures of Schools in State	No. Schools in State Represented at Examinations	Percentage Failed	No. Failures of Schools Out of State	No. Schools Out of State Represented at Examinations	Percentage Failed	Percentage Failed in All U. S. Schools
Alabama.....	55	0	1	0.0	0	6	0.0	0.0
Arkansas.....	81	0	1	0.0	0	4	0.0	0.0
California.....	473	2	4	0.4	0	48	0.0	0.4
Colorado.....	100	0	1	0.0	0	14	0.0	0.0
Connecticut.....	15	0	0	0.0	2	11	18.2	18.2
Dist. of Columbia.....	11	1	1	9.2	0	4	0.0	9.2
Georgia.....	164	0	2	0.0	0	9	0.0	0.0
Illinois.....	357	17	5	4.7	13	37	35.1	39.8
Indiana.....	155	0	1	0.0	0	13	0.0	0.0
Iowa.....	118	0	1	0.0	0	7	0.0	0.0
Kansas.....	118	1	1	0.8	0	9	0.0	0.8
Kentucky.....	119	0	0	0.0	0	11	0.0	0.0
Louisiana.....	225	0	2	0.0	0	22	0.0	0.0
Maryland.....	201	0	2	0.0	4	14	28.6	28.6
Massachusetts.....	25	1	3	4.0	2	12	16.7	20.8
Michigan.....	232	0	2	0.0	0	19	0.0	0.0
Minnesota.....	173	0	1	0.0	0	28	0.0	0.0
Missouri.....	265	0	2	0.0	1	19	5.3	5.3
Nebraska.....	84	1	2	1.2	0	2	0.0	1.2
New York.....	129	10	7	7.8	11	29	37.9	45.7
North Carolina.....	163	0	2	0.0	0	22	0.0	0.0
Ohio.....	288	0	3	0.0	0	22	0.0	0.0
Oklahoma.....	1	0	0	0.0	0	1	0.0	0.0
Oregon.....	59	2	1	3.4	0	11	0.0	3.4
Pennsylvania.....	313	0	6	0.0	0	23	0.0	0.0
South Carolina.....	71	0	1	0.0	0	8	0.0	0.0
Tennessee.....	182	0	3	0.0	0	9	0.0	0.0
Texas.....	355	2	3	0.5	1	23	4.4	4.9
Utah.....	21	0	1	0.0	0	6	0.0	0.0
Vermont.....	9	2	1	22.2	0	0	0.0	22.2
Virginia.....	158	9	2	5.7	1	4	25.0	30.7
Washington.....	57	0	1	0.0	0	18	0.0	0.0
Wisconsin.....	143	0	2	0.0	0	21	0.0	0.0
Subtotals.....	4,920	48	65	0.9	35	486	7.2	8.1
States Without Four Year Medical Schools								
Arizona.....	11				0	9	0.0	
Delaware.....	21				0	9	0.0	
Florida.....	448				131	58	29.2	
Idaho.....	5				0	5	0.0	
Maine.....	10				1	9	10.0	
Mississippi.....	80				0	17	0.0	
Montana.....	4				0	3	0.0	
Nevada.....	3				0	3	0.0	
New Hampshire.....	6				0	5	0.0	
New Jersey.....	27				0	9	0.0	
New Mexico.....	6				0	6	0.0	
North Dakota.....	13				0	10	0.0	
Rhode Island.....	2				0	2	0.0	
South Dakota.....	10				1	7	10.0	
West Virginia.....	38				0	16	0.0	
Wyoming.....	1				0	1	0.0	
Alaska, Hawaii, Puerto Rico, Canal Zone, and Guam.....	40				2	25	5.0	
Subtotals.....	725				135	194	5.6	

The totals of all examined before medical licensing examinations, as shown in table 4, was 7,525, of whom 6,543 passed and 982, or 13.0%, failed. In both state board and the National Board tests, there were 9,564 examined, of whom 8,522 passed and 1,042, or 9.8%, failed.

Failures in Medical Licensure Examinations

Failures before medical licensing boards by graduates of existing approved medical schools in the United States are recorded in table 7. In this compilation, the United

States is divided into two groups: the 32 states and the District of Columbia in which four year medical schools having graduates last year are located and the states, territories, and outlying possessions that had no four year medical school in complete operation in 1953. The figures include the total number examined, the number who failed state board examinations and were graduates of a medical school located in the state in which they were examined, and the number of failures in a given state who after a successful examination they are recorded among those who passed.

The physicians who failed examinations in the state in which they obtained their professional training numbered 48. This occurred in 11 states. There were 35 failures reported by 8 states among physicians who graduated from approved medical schools located in states other than the one in which they were examined. Nineteen states had no failures in either group, while five

TABLE 8.—FAILURES BEFORE LICENSING BOARDS BY LICENTIATES, 1953

State	Licenses Issued by Examination, Reciprocity or Endorsement	Approved Medical Schools in the United States and Canada					Foreign Faculties of Medicine					Unapproved Medical Schools in the United States					Schools of Osteopathy in the United States					Total Failures by Licentiates, 1953
		Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			
		Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	
Alabama	147	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Arizona	108	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Arkansas	120	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
California	1,977	1	19	..	6	..	12	1	9	4	2	..	..	..	..	..	..	..	..	..	..	54
Colorado	233	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Connecticut	235	..	3	..	..	..	..	..	3	1	1	..	..	..	..	..	..	..	..	..	..	5
Delaware	43	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
District of Columbia	178	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
Florida	340	17	3	7	..	1	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	31
Georgia	285	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	3
Idaho	49	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Illinois	766	21	4	1	1	..	85	..	29	..	3	..	..	..	..	..	..	..	..	..	..	144
Indiana	366	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Iowa	183	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	4
Kansas	303	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Kentucky	108	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Louisiana	296	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Maine	75	..	..	..	..	..	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	4
Maryland	410	1	2	..	..	..	1	1	2	2	..	..	..	..	..	..	..	..	..	..	..	9
Massachusetts	392	1	2	1	1	..	1	..	2	..	..	..	..	2	..	..	..	..	..	..	..	10
Michigan	417	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2
Minnesota	364	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	3
Mississippi	151	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Missouri	382	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2
Montana	47	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Nebraska	128	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Nevada	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
New Hampshire	46	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	2
New Jersey	367	..	6	..	2	..	..	7	1	8	..	..	..	..	1	..	..	2	..	2	..	29
New Mexico	60	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	3
New York	1,348	13	..	5	..	..	34	3	68	1	8	..	1	..	..	2	9	..	5	..	..	149
North Carolina	328	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
North Dakota	42	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Ohio	799	..	9	..	2	..	6	10	5	21	2	..	..	..	..	..	..	1	1	..	..	57
Oklahoma	110	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Oregon	150	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Pennsylvania	666	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Rhode Island	58	..	..	..	..	..	2	3	..	..	2	..	..	..	..	..	..	..	..	..	..	7
South Carolina	140	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
South Dakota	31	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Tennessee	276	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Texas	635	1	5	1	..	..	1	..	..	..	..	..	..	..	1	..	1	1	..	..	..	11
Utah	78	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Vermont	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Virginia	324	3	5	3	..	..	1	..	..	..	1	..	..	..	..	2	..	..	..	..	..	15
Washington	221	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
West Virginia	124	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Wisconsin	387	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
Wyoming	29	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Hawaii and Puerto Rico	119	1	1	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	6
Totals	14,434	68	87	19	13	2	150	30	119	44	22	0	1	2	5	5	11	4	6	3	..	591

obtained their professional training in schools in other states.

In general, state licensing boards require the applicant to receive an over-all average of 75% and at least 60% in any one subject. In case of failure in not more than two subjects, the applicant is permitted a second examination in those subjects within 12 months. A few states consider such persons as conditioned in the subjects in which they fail. Conditioned candidates are not counted as failures in these statistics. When their grades are raised states had failures in both groups. In the 16 states and the territories and outlying possessions that are included in this study, 4 boards reported 135 failures.

The data pertaining to licensure failures are further subdivided in table 8 by the number of candidates who were licensed after previously failing a licensing examination. The figures are presented for four categories: approved medical schools in the United States and Canada, foreign faculties of medicine, unapproved medical schools, and schools of osteopathy. These groups are

classified according to the number licensed after failing a state board examination once and after two or more failures. The table further indicates whether the single and multiple failures have been in the state where licensed or elsewhere. The total number of candidates licensed after examination or by endorsement of credentials is shown and also the total number of failures in all groups.

Of the 14,434 licenses issued in 1953, 591 were granted to applicants who had previously been unsuccessful before a licensing board. All physicians licensed in 1953 in six states had no failures in a state board examination.

From the approved medical schools, 189 graduates had previously failed a state board. Sixty-eight had one failure in the state in which they were licensed, while 87 were licensed after one failure elsewhere. Thirty-four received licenses after more than one failure.

In the group of foreign faculties, 365 failed state board tests before obtaining a license. Of these, 180 had one previous failure and 185 had more than one previous failure. Also 13 graduates of unapproved medical schools and 24 graduates of schools of osteopathy were registered after previous failure.

TABLE 9.—RECIPROCITY AND ENDORSEMENT

Reciprocates with, or Endorses Certificates Granted by

Marginal Number	The Examining Board of	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	Marginal Number
1	Alabama	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	+	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	+	3
4	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (reg. & homeo. bds.)	..	..	..	..	..	..	..	+	..	..	+	..	+	..	+	..	+	+	+	+	+	..	..	..	..	..	..	+	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies																													9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	10
11	Idaho	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	..	..	+	..	..	..	+	+	..	..	+	..	+	..	+	..	+	+	..	+	..	..	+	..	12
13	Indiana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
14	Iowa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14
15	Kansas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15
16	Kentucky	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16
17	Louisiana (reg. & homeo. bds.)	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	17
18	Maine	..	..	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	..	..	+	+	+	..	+	+	+	+	+	+	+	+	18
19	Maryland (reg. & homeo. bds.)	+	..	+	+	..	+	+	+	..	+	+	+	+	+	+	+	+	+	..	..	+	+	..	+	+	+	+	+	+	+	+	19
20	Massachusetts	+	..	..	..	..	+	+	+	..	+	+	..	+	+	+	+	+	+	+	..	..	..	..	+	+	+	..	..	+	+	..	20
21	Michigan	+	+	+	+	+	+	+	+	..	+	+	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	21
22	Minnesota	+	+[41]	+	+	+[41]	+[41]	..	..	+	+	+[41]	..	+[41]	+	+[41]	+	+	+	+	..	+[41]	+	..	+	+	+	+	+	+[41]	+	+	22
23	Mississippi	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	23
24	Missouri	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	24
25	Montana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
26	Nebraska	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	26
27	Nevada	+	..	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	..	+	+	+	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	New Jersey	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	29
30	New Mexico	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	30
31	New York	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
32	North Carolina	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	32
33	North Dakota	+	..	+	+	..	..	..	..	..	+	..	+	+	+	+	+	+	+	..	..	+	..	..	+	+	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	+	+	+	+	+	+	+	..	..	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	..	+	+	+	+	+	..	+	..	..	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	38
39	South Carolina	+	..	..	..	..	..	..	+	..	+	..	..	+	..	+	+	+	+	+	..	+	..	+	+	..	+	..	+	+	..	+	39
40	South Dakota	+	+	+	+	+	..	..	..	..	+	..	+	+	+	+	+	..	..	..	..	+	+	+	+	..	..	..	..	+	+	+	40
41	Tennessee	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	41
42	Texas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	42
43	Utah	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	43
44	Vermont	..	..	..	..	..	..	..	..	[18]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	[18]	..	..	44
45	Virginia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45
46	Washington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46
47	West Virginia	+	..	+	[20]	[20]	+	+	+	..	+	..	+	[20]	[20]	[20]	[20]	+	+	+	[20]	+	+	+	+	+	+	+	+	..	+	..	47
48	Wisconsin	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	+	..	+	+	+	+	..	+	..	..	..	..	+	..	+	..	+	..	..	+	..	+	+	+	+	..	..	+	+	+	..	50
51	Guam	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Hawaii	No reciprocal relations																													52
53	Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	+	..	+	..	..	..	..	53

This summary should be supplemented by direct communication with the

Some states have additional requirements for graduates of schools outside the United States and Canada.

+, indicates reciprocal or endorsement relationships have been established; .. indicates no reciprocal or endorsement relationships have been established. (See column—"At the discretion of the board.")

1. 1st P, first papers required; ⊕, in citizenship column indicates full citizenship required, in other columns it implies a requirement.
2. In most cases there is a small additional recording or registration fee.
3. Year of practice after internship required.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. All applicants must be graduates of a medical school approved by the American Medical Association.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Canadian citizens are required to file first papers.
11. Not applicable to citizens of Canada.
12. Oral examination required when application is based on a license issued by some other state dated ten or more years prior to filing application.
13. No reciprocity.
14. Oral examination required.
15. Endorsement of National Board of Medical Examiners $35.
16. Actual practice for a period of three years immediately preceding date of application.
17. Practical, clinical examination required.
18. In lieu of its own examination, certificate of National Board may be accepted in whole or in part.
19. Regular and Homeopathic boards.
20. Licentiates of California, Colorado, Indiana, Iowa, Kansas, Massachusetts, and Rhode Island accepted on reciprocal basis at discretion of board.

Five physicians had more than 14 failures before securing licensure. Three of these physicians were graduates of foreign medical schools and two were graduates of unapproved medical schools. One physician had 15, another 16, and two had 17 failures, while one physician was licensed after 28 failures. This person has repeatedly been unsuccessful in examinations in four states since 1940. A few of the states have no restrictions on the number of examinations that may be taken prior to licensure, but most states have a set limit of three examinations.

Registration by Reciprocity and Endorsement

The reciprocity and endorsement policies in medical licensure in the United States, Alaska, Guam, Hawaii, and Puerto Rico are summarized in table 9. Florida is the only state that requires all applicants for licensure to pass a written examination. Hawaii does not have reciprocal relations with any state, but will endorse physicians certified by the National Board of Medical Examiners. Eighteen state boards, the District of Columbia, and Alaska require applicants for licensure to obtain a certificate from the board of examiners in the basic sciences

POLICIES OF MEDICAL LICENSING BOARDS

Marginal Number	Reciprocates with, or Endorses Certificates Granted by: New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	Requirements: Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]	Miscellaneous	Marginal Number
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	14	⊕11	50	..	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕8	⊕	3[4,7]	1st P	100	41	2
3	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	..	⊕	⊕	14	⊕	50	42	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	0	⊕21	100	18	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[43]	+9	⊕	⊕	..	⊕	50	42	5
6	..	..	..	+	..	..	+	+	..	..	+	+	..	+	..	..	+	..	..	..	..	+	+8	⊕10	..	3[16]	1st P10	75	18	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+27	⊕	⊕	2	⊕	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	1[8]	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	0	⊕	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	..	⊕	100	..	11
12	..	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	+17	..	⊕	1	1st P	25	17,42	12
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	1[4]	..	50	..	13
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕	⊕	1[4]	1st P	50	..	14
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	1[4,7]	⊕	50	42	15
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	1[4]	⊕	75	..	16
17	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	28	1[4]	1st P[40,10]	50	42	17
18	..	..	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	..	..	+	..	..	..	1[4]	..	50	..	18
19	+	+	..	+	+	+	+	+	+	..	+	+	..	+	+	..	+	+	..	+	+	+	..	..	..	1[4]	1st P	50	42	19
20	+[44]	+	..	+	+	..	+	+	+	..	+	+	+	+	+	..	+	+	..	..	..	+	..	..	..	0	1st P	50[28]	..	20
21	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+38	⊕37	⊕	1[4]	+	100	34	21
22	+[41]	+	..	+[41]	+	+	+	+[41]	..	+	+	+	+	+	+	+	+	+	+	+	+	+	..	⊕	..	0	+	100	11,17,42	22
23	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	..	..	..	..	⊕11	50	..	23
24	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+27	..	⊕32	1[4]	⊕	100	..	24
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	1[4]	⊕	75	14,42	25
26	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	..	..	⊕	..	1[4]	⊕	50[28]	..	26
27	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	..	..	..	..	..	⊕	⊕	1[4]	⊕	200	14,42	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	⊕	0	⊕11	50	..	28
29	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	..	⊕	0	⊕	100	..	29
30	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	⊕	..	1[4]	1st P	50	..	30
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	2	1st P	30	..	31
32	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	..	..	..	0	..	100	42,6	32
33	..	+	..	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	⊕	1	⊕11	50	14,42	33
34	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	..	..	..	1[4]	1st P	50	..	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕33	⊕	1[4]	⊕	100	42,11,6	35
36	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+9,27	⊕	⊕	..	⊕	100	6,42	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	⊕	2[24]	1st P	50	42	37
38	..	+	..	+	+	..	+	..	..	..	+	..	..	+	..	+	+	+	+	..	..	+[14]	+14	⊕	⊕	0	1st P	20	14	38
39	..	+	..	+	+	+	+	..	..	..	+	+	..	+	..	+	+	+	+	..	+	..	..	..	..	1[4]	⊕	50	42	39
40	..	+	+	+	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	..	..	..	+	⊕	⊕	1	1st P	50	..	40
41	+	+	+	+	+	+	+	+	+	..	+	+	+	..	+	+	+	+	+	..	..	+	+30	⊕	..	0	⊕	50	42	41
42	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	..	..	⊕	..	0	⊕	50	..	42
43	+	+	+	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	..	+	+	..	⊕	31	+	50	42	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	..	..	..	..	..	+	+22	..	⊕	1[8]	⊕	50	11	44
45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[39]	+	..	..	2[26]	..	100	..	45
46	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+6	⊕6	⊕	0	..	35	..	46
47	..	+	+	+	+	+	+	20	+	+	+	+	+	+	+	..	..	+	+	+	..	..	+	..	⊕	0	⊕	100	..	47
48	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	..	+	..	+	+[14]	+16	⊕	⊕	1[29]	1st P	75	6	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+14	..	⊕	0	⊕	50	..	49
50	..	+	+	+	+	+	..	..	..	..	+	+	+	+	+	+	+	+	..	..	..	..	+	⊕	..	0	⊕	100	6	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	0	..	50	6	51
52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	..	⊕	25	42,6	52
53	..	..	+	..	..	..	..	+	..	..	..	..	..	..	..	+	..	..	..	..	..	+5,39	+	..	⊕	1[8]	⊕	30	..	53

secretary of the licensing board of the state in which the physician is interested.

21. Not required if country in which applicant is licensed will admit to practice citizens of the United States licensed to practice in some state or on proof of requirements similar to those required by California for graduates of foreign medical schools.
22. Fee $20.
23. Oral examination required if applicant's state requires it.
24. If the applicant passes the examination in the state from which he transfers after the completion of his internship, no practice is required.
26. Internship accepted at the discretion of the board as the equivalent of two years' practice.
27. Fee, $25.
28. Fee for license on basis of National Board certificate, $25.
29. A two year internship or a year of residency is accepted.
30. Diplomates of National Board not required to have been in practice for three years.
31. Same as required of candidates of state applying for licensure.
32. Not required for licensure by reciprocity.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee same as applicant's state charges but not less than $75.
37. For matriculants after Oct. 15, 1937.
39. Reciprocity extended at discretion of board to candidates whose qualifications would entitle them to admission to examination and who took examination equivalent to that required by this board.
40. Permanent license withheld until completion of citizenship.
41. At the discretion of the board.
42. Graduates of foreign medical schools are not accepted for licensure by reciprocity.
43. Reciprocity extended at discretion of board to states having comparable licensing requirements and which accept Colorado applicants on a substantially equal reciprocal basis.

TABLE 10.—*Candidates Licensed by Reciprocity and Endorsement of Credentials, 1953*

Source of Former License or Credentials

Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
States Issuing Licenses by Reciprocity or Endorsement	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U.S. Govt. Services	National Board of Medical Examiners	Alaska, Canal Zone, Guam, Hawaii and Puerto Rico	Canadian, Foreign	Special Exemption
Alabama	92	..	..	1	..	1	..	..	..	..	10	..	4	..	..	1	3	21	..	3	1	..	2	2	..	..	..	1	..	..	..	1	2	..	3	1	1	1	..	1	..	14	3	..	..	3	1	2	1	..	..	8	..	..	..
Arizona	96	..	..	1	6	2	..	1	..	..	..	..	6	6	3	1	..	2	..	2	..	4	13	..	5	..	2	..	..	..	1	1	1	1	7	..	2	2	1	..	..	..	3	..	..	1	2	..	1	..	..	18	..	1	..
Arkansas	39	..	..	..	..	..	..	..	..	..	1	..	2	..	1	2	1	5	..	..	..	..	..	..	2	..	1	..	..	2	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
California	1,487	4	9	7	..	13	6	..	2	3	8	..	165	36	30	33	20	28	3	33	2	58	73	2	59	..	34	..	2	11	..	42	4	1	80	16	19	51	1	2	2	23	31	10	2	14	19	4	44	1	24	397	6	..	3
Colorado	143	..	..	1	7	..	..	..	..	..	..	..	11	1	3	6	3	2	..	1	..	1	16	..	12	..	17	..	..	..	..	1	2	..	6	3	..	6	..	1	2	1	7	..	1	1	..	..	1	1	..	29	..	..	..
Connecticut	214	..	..	..	2	..	..	..	..	1	..	..	..	..	1	..	1	..	1	6	5	..	1	..	1	..	..	..	1	2	..	11	..	..	3	..	..	3	..	1	..	2	2	..	1	2	..	..	..	..	167	..	..	..
Delaware	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..	2	..	..	1	..	..	7	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	..	1	..
Dist. of Columbia	165	..	..	..	1	..	..	..	..	..	1	..	1	..	..	1	1	2	..	12	1	2	1	2	4	1	1	..	..	3	..	5	7	..	1	..	..	6	..	1	..	4	..	..	..	3	..	..	1	..	..	102	..	..	2
Florida	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	113	1	..	1	2	1	..	..	..	..	..	..	2	3	1	2	4	6	..	5	..	2	1	2	6	..	..	..	..	1	..	1	5	..	3	2	..	8	..	7	..	14	2	..	1	4	..	3	..	..	..	..	..
Idaho	43	..	1	..	7	2	..	..	..	..	..	..	2	..	1	1	..	2	..	1	..	2	2	..	2	1	..	..	..	..	..	1	..	..	1	1	2	..	..	..	..	..	1	2	..	..	2	..	1	1	..	7	..	..	..
Illinois	219	..	..	1	3	5	..	..	..	..	1	..	..	12	5	1	4	2	..	2	1	8	..	1	22	..	3	..	..	1	..	4	1	..	10	..	..	14	..	..	1	..	..	1	..	2	1	8	1	4	100	..	..	..
Indiana	144	..	..	2	5	1	..	..	1	2	1	..	29	..	1	..	15	..	..	6	..	4	3	..	23	..	2	..	3	1	..	4	3	1	14	1	..	8	..	1	..	5	2	..	..	1	1	1	2	..	..	1	..	..	..
Iowa	86	1	..	..	1	1	..	1	..	..	..	..	14	4	..	1	..	2	..	2	..	3	4	..	10	1	10	..	..	..	..	2	1	2	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	19	..	..	..
Kansas	86	1	..	1	3	1	..	..	..	..	..	..	4	4	2	..	1	4	..	4	..	..	2	..	9	..	3	..	..	..	..	2	1	1	1	7	..	2	..	..	..	5	1	..	..	2	..	..	5	..	..	15	..	..	..
Kentucky	91	1	..	3	1	..	..	..	..	..	..	..	8	1	2	..	..	2	..	3	..	4	1	2	4	..	..	..	..	1	..	2	1	..	9	..	..	1	..	1	1	14	3	..	..	5	..	1	..	..	..	20	..	..	..
Louisiana	70	2	..	3	..	..	2	..	..	..	..	..	4	1	4	1	..	..	..	2	3	2	1	9	2	..	1	..	1	..	..	4	..	..	2	2	..	4	..	..	..	9	5	1	..	4	..	..	1	..	..	..	..	..	..
Maine	50	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	5	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Maryland	207	..	..	1	6	1	..	2	13	..	2	..	6	2	1	..	1	4	..	2	1	1	3	1	8	..	4	..	..	1	..	3	3	..	7	1	..	13	..	..	..	5	..	..	1	4	..	..	..	..	33	..	..	..
Massachusetts	353	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	2	4	2	12	..	..	..	3	..	..	..	..	1	1	..	4	2	..	6	..	..	5	7	..	..	1	1	..	4	1	..	1	4	..	..	287	..	..	..
Michigan	189	..	..	2	3	2	1	1	1	..	3	..	16	13	5	2	6	3	1	8	1	..	3	..	7	..	1	..	3	..	..	11	2	..	18	..	..	8	1	..	1	3	2	..	2	4	..	..	4	..	..	51	..	..	..
Minnesota	154	2	..	..	8	2	..	1	..	..	3	..	..	5	4	2	4	9	..	3	..	4	..	2	2	..	8	..	..	..	..	1	..	..	4	3	1	8	..	..	..	4	9	..	..	3	..	..	4	..	..	58	..	..	..
Mississippi	67	2	..	3	2	..	..	..	..	..	1	..	1	1	1	..	2	22	..	1	..	..	..	..	2	..	..	..	..	..	..	1	2	..	..	1	..	..	..	..	..	14	..	..	..	1	..	..	3	..	..	5	2	..	..
Missouri	114	1	..	4	2	1	..	..	..	..	..	..	11	4	3	17	8	4	..	2	2	2	1	..	..	..	..	..	..	..	..	1	..	..	4	1	..	1	..	1	..	5	4	1	..	1	..	..	2	..	..	26	..	..	..
Montana	43	..	..	..	3	2	..	..	..	..	..	..	3	..	3	2	1	..	..	..	2	8	1	2	..	..	1	..	..	1	..	..	..	1	..	..	..	1	..	..	..	1	1	1	..	1	3	..	1	..	..	3	..	..	..
Nebraska	45	..	..	..	3	3	..	..	..	..	..	..	4	2	11	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	2	..	..	1	1	..	2	..	..	..	..	..	..	2	..	..	8	..	..	..
Nevada	15	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..
New Hampshire	39	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	2	1	1	..	..	..	..	..	1	..	..	6	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	22	..	..	1
New Jersey	319	..	1	1	4	..	1	1	..	..	2	..	6	2	1	..	4	3	..	11	..	1	2	..	3	..	..	..	1	..	..	54	1	..	7	..	1	38	1	1	..	2	..	..	1	3	..	1	2	..	..	163	..	..	..
New Mexico	54	..	..	..	2	2	..	..	..	..	..	..	2	2	3	1	..	2	..	3	2	5	1	1	2	..	1	..	..	..	..	7	..	..	2	..	..	1	..	..	1	..	5	..	..	1	1	..	3	..	..	4	..	..	..
New York	1,010	..	..	..	13	..	..	1	2	..	1	..	4	5	1	1	3	6	2	20	1	9	10	..	..	..	1	..	16	1	..	9	..	2	..	..	22	10	..	..	6	4	3	1	10	6	2	..	2	..	..	810	10	6	10
North Carolina	147	..	..	2	2	..	1	..	1	..	7	..	3	1	..	1	4	4	2	10	..	3	1	1	1	..	1	..	2	..	..	4	1	..	6	1	..	6	..	3	..	3	..	..	1	25	..	3	1	..	..	46	..	..	..
North Dakota	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	13	..	..	..
Ohio	398	2	..	1	5	1	3	..	1	1	3	..	37	19	6	2	20	4	..	12	..	23	9	1	38	..	3	..	..	5	..	31	7	2	..	1	..	24	..	..	..	10	3	2	1	2	1	6	8	..	..	104	..	..	..
Oklahoma	57	..	..	8	..	..	..	..	..	..	2	..	3	2	1	3	3	3	..	..	..	..	..	1	5	..	..	..	..	..	..	1	..	..	..	..	..	3	..	..	1	2	12	..	..	..	..	..	..	..	..	..	6	..	..	..
Oregon	90	..	..	4	2	1	..	..	..	1	5	2	4	..	..	..	3	..	1	..	5	9	1	1	1	9	..	..	..	..	..	2	..	..	..	4	..	3	..	..	..	3	1	..	..	3	..	1	4	..	..	21	..	..	..
Pennsylvania	340	..	..	2	5	1	1	1	1	4	..	9	3	6	2	3	5	..	10	..	2	5	..	3	..	1	..	..	11	..	12	5	..	11	..	..	..	..	1	..	4	2	..	..	7	1	1	2	..	5	209	3	..	1
Rhode Island	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	2	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	19	..	..	..
South Carolina	69	1	..	1	..	..	..	..	1	1	9	..	1	..	..	..	3	3	..	5	..	1	2	1	1	..	..	..	..	..	..	1	8	..	..	2	..	4	..	..	..	7	..	..	..	8	1	..	..	..	..	8	..	..	..
South Dakota	21	..	..	1	1	..	..	..	1	..	..	..	1	2	..	..	..	..	..	..	..	1	3	..	..	..	3	..	..	..	..	1	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..
Tennessee	94	..	..	2	1	1	..	..	..	..	7	..	3	2	..	1	5	6	..	1	..	2	1	9	3	..	..	..	2	..	3	6	..	3	..	..	4	..	1	..	..	3	..	1	8	..	..	..	..	..	19	..	..	..
Texas	232	3	1	15	10	2	..	..	1	..	5	..	28	9	4	5	9	33	..	4	..	6	3	3	8	..	5	..	..	1	..	6	3	..	15	17	..	12	..	2	1	8	..	1	..	2	1	2	2	..	4	...	1	..	..
Utah	53	1	..	..	7	5	..	..	..	..	1	3	1	1	1	1	..	..	..	..	..	7	..	..	3	..	1	1	..	..	..	2	..	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	12	..	..	..
Vermont	32	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	22	..	..	..
Virginia	139	..	..	..	3	1	..	1	1	..	3	..	1	..	..	2	6	3	..	8	1	1	2	1	3	..	1	..	2	..	11	10	..	4	..	7	..	..	2	..	6	2	..	..	..	..	3	1	..	3	50	..	..	..
Washington	161	..	..	1	15	..	..	..	1	..	1	1	6	2	3	2	..	2	..	1	..	6	11	..	12	2	1	..	..	1	..	1	..	..	4	1	17	9	3	..	..	1	5	..	..	..	..	..	5	..	..	42	..	4	1
West Virginia	79	..	..	..	..	2	..	1	..	..	..	..	1	1	..	..	3	2	..	10	..	1	..	..	2	..	..	..	..	..	..	..	2	..	4	1	..	13	..	..	..	..	2	1	1	..	8	..	..	2	..	..	22	..	..	..
Wisconsin	103	..	..	1	2	1	..	..	..	..	..	..	11	2	1	1	..	2	..	2	..	4	9	..	6	..	1	..	..	..	..	3	1	1	2	..	..	1	1	..	1	1	1	..	..	..	..	..	..	..	30	11	..	..	7
Wyoming	28	..	..	..	5	1	..	..	..	..	..	..	1	..	..	3	..	1	..	..	..	1	..	..	..	1	5	..	..	..	..	1	..	..	..	..	..	3	..	..	1	..	..	1	..	..	..	..	..	..	..	..	4	..	..	..
Alaska, Canal Zone Guam, Hawaii and Puerto Rico	65	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	4	..	..	..	1	3	..	..	..	..	1	..	..	4	..	3	..	..	4	..	..	..	1	..	..	..	1	2	..	..	..	..	35	..	1	2
Totals	7,869	22	12	70	148	56	17	11	28	9	75	4	419	154	114	98	142	207	11	218	33	185	201	51	277	7	127	2	28	56	2	261	87	12	249	67	73	296	15	26	18	193	126	25	33	129	44	34	122	4	71	3,136	24	13	27
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55

of the state. In the section of this report pertaining to basic science boards is included a table outlining the reciprocity, endorsement, exemption, or waiver policies of these boards.

Twenty-eight states, Alaska, and Puerto Rico have reciprocal agreements with specific states. In 21 states reciprocity is extended at the discretion of the licensing board. Sixteen states, which have reciprocal agreements, also have similar discretionary powers to endorse applicants from nonreciprocating states who present credentials that correspond with those required by their respective states in the year issued. Also in this table is a column indicating the recognition accorded the certificate of the National Board of Medical Examiners.

Additional requirements, including professional practice, citizenship, oral examination and internship, and the fee for a license by reciprocity or endorsement, are also recorded. In some states, physicians of Canadian birth are exempt from the citizenship requirement. This is indicated by footnote. Few states will accept graduates of foreign faculties of medicine on a reciprocal basis. Other requirements or exemptions are indicated by footnotes.

This chart will be made available in reprint form. It is helpful to physicians who are considering a change in location. The facts recorded in this table are intended to present merely statements of licensure policies. The information here given should be supplemented by direct communication with the licensing boards. A list of the executive officers in charge of medical licensure appears elsewhere in this study.

The procedure in issuing licenses by reciprocity or endorsement varies. Some states entertain applications for licensure at any time, while others hold monthly, quarterly, or semiannual meetings. The policy in effect in each state is contained in table 25 (page 470). In addition, THE JOURNAL publishes biweekly the exact dates when reciprocity or endorsement applications are considered.

The credentials presented by physicians granted licenses to practice medicine without written examination are given in table 10. There were 7,869 so registered on the basis of licenses from other states, the District of Columbia, the territories or outlying possessions of the United States, Canada, and foreign countries, the certificate of the National Board of Medical Examiners, by special exemption, and by acceptance of service with an agency of the government of the United States. California issued the greatest number of licenses by this method. In this state 1,437 were registered. New York licensed 1,010 by this method. Figures for other states were fewer than 400. Nine states licensed more than 200.

The largest number of candidates who presented the same type of credentials were the 3,136 diplomates certified by the National Board of Medical Examiners. On the basis of the certificate of the National Board, 810 were licensed in New York, 397 in California, 287 in Massachusetts, and 209 in Pennsylvania. Other states registered fewer than 200. None were licensed on this basis in Florida, Louisiana, or Texas.

There were 419 licenses issued in Illinois, 296 in Pennsylvania, 277 in Missouri, 261 in New York, and 249 in Ohio presented to other states for reciprocal registration. Licenses from every state were used as the basis for registration by this method, ranging from 2 licenses from Nevada to 419 from Illinois.

Seven states registered 71 physicians by endorsement of credentials from one of the government services. Twenty-four physicians were licensed in seven states on the basis of a license issued in Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico; 13 physicians in 5 states on the basis of Canadian or foreign credentials and 27 in 8 states were licensed by special exemption.

Table 11 records the number of individual schools represented by the 7,869 reciprocity licentiates. Every approved medical school in the United States and 8 of the 10 approved medical schools of Canada had graduates licensed without written examination in 1953. The 7,869 physicians registered without written examination in the United States in 1953 included 7,473 graduates of approved medical schools in the United States. There were 272 graduates of Harvard Medical School licensed by reciprocity. More than 100 graduates from each of 33 schools secured such licenses. This table reflects the movement of physicians to states other than the one in which they obtained their professional training or in which they first established their practice.

One hundred twenty-one foreign-trained physicians obtained licenses by reciprocity or endorsement in 17 states and the territories and outlying possessions, and 47 graduates of approved medical schools no longer in operation were registered by 29 boards. Twenty-four graduates of unapproved medical schools secured licenses in 8 states, and 85 graduates of schools of osteopathy were registered to practice medicine, surgery, or both, in 11 states. There were 277 represented in these four groups. There were 119 graduates of Canadian medical schools registered in 34 states.

Licentiates Representing Additions to the Medical Profession

Figures for the number of physicians who secured their first license to practice medicine and surgery in 1953 and who therefore represent additions to the medical profession in the United States and its territories and outlying possessions are presented in tables 12 and 13. Included in these compilations are figures pertaining to candidates examined and licensed in 1953, candidates who were examined in previous years but to whom licenses were not issued until 1953 pending completion of a required internship, citizenship, or other technicalities, and physicians not previously licensed in any state who were certified during the year on the basis of the examinations of the National Board of Medical Examiners. The figures also include physicians licensed on the basis of governmental credentials and Canadian and foreign licenses. The majority represent recent graduates.

These official figures indicate that 7,276 persons were added to the physician population in 1953 in the United States, the Canal Zone, Guam, Hawaii, and Puerto Rico. By reference to table 1 it can be noted that 14,434 licenses were issued during the year, indicating that 7,158 had previously been licensed. In 1953 there were about 3,421 deaths of physicians reported to the office of the American Medical Association. When this figure is deducted from the number licensed in 1953 for the first time it will be seen that the net increase in the physician population in the United States and its territories and

Marginal Number	SCHOOL	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine
	ALABAMA																		
1	Medical College of Alabama, Birmingham	1	..	..	3	..	..	..	..	..	..	..	..	..	1	1	1	1	..
	ARKANSAS																		
2	University of Arkansas School of Medicine, Little Rock	1	1	..	9	1	..	..	..	..	1	..	1	2	..	1	4	3	..
	CALIFORNIA																		
3	College of Medical Evangelists, Loma Linda-Los Angeles	2	2	..	18	4	..	..	1	..	1	4	1	1	..	3	..	..	..
4	University of Southern California School of Medicine, Los Angeles	..	2	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..
5	Stanford University School of Medicine, Stanford-San Francisco	..	1	..	2	1	..	..	..	..	..	1	1	..	..	..	1	..	..
6	University of California School of Medicine, San Francisco	..	1	..	1	..	1	..	1	..	1	1	..	..	..	1	1	..	..
	COLORADO																		
7	University of Colorado School of Medicine, Denver	1	1	..	13	7	..	..	..	..	1	2	4	..	3	..	..	..	..
	CONNECTICUT																		
8	Yale University School of Medicine, New Haven	..	1	..	13	1	20	..	..	..	1	..	..	..	1	1	1	1	2
	DISTRICT OF COLUMBIA																		
9	Georgetown University School of Medicine, Washington	..	1	..	13	1	7	..	29	..	1	..	1	..	..	1	1	..	1
10	George Washington University School of Medicine, Washington	1	1	1	21	1	1	..	37	..	..	1	2	1	1	..	..	..	..
11	Howard University College of Medicine, Washington	..	..	..	11	..	3	1	14	..	2	..	1	1	..	1	..	1	..
	GEORGIA																		
12	Emory University School of Medicine, Atlanta	3	..	1	5	..	..	..	..	..	1	..	..	1	..	..	..	..	..
13	Medical College of Georgia, Augusta	6	..	..	3	..	1	..	1	..	..	..	1	..	..	..	..	..	..
	ILLINOIS																		
14	Chicago Medical School	..	..	..	9	..	1	..	..	..	..	..	16	1	..	..	..	..	..
15	Northwestern University Medical School, Chicago	4	4	2	58	3	1	..	..	..	1	2	23	11	6	3	3	4	..
16	Stritch School of Medicine of Loyola University, Chicago	..	3	..	36	1	2	..	..	..	1	..	3	6	3	..	..	..	..
17	University of Chicago, The School of Medicine	1	..	..	35	1	..	..	..	..	..	..	9	1	..	..	1	..	..
18	University of Illinois College of Medicine, Chicago	1	3	..	78	6	..	..	..	..	2	..	9	9	6	3	2	2	..
	INDIANA																		
19	Indiana University School of Medicine, Bloomington-Indianapolis	..	6	..	37	1	..	..	..	..	2	..	12	..	4	3	2	..	..
	IOWA																		
20	State University of Iowa College of Medicine, Iowa City	..	3	1	38	1	1	..	..	..	1	2	5	1	9	1	1	3	..
	KANSAS																		
21	University of Kansas School of Medicine, Lawrence-Kansas City	1	1	2	31	6	..	..	1	..	1	1	2	..	1	..	..	..	..
	KENTUCKY																		
22	University of Louisville School of Medicine, Louisville	2	1	2	22	..	1	..	1	..	3	..	3	11	..	1	1	1	..
	LOUISIANA																		
23	Louisiana State University School of Medicine, New Orleans	3	..	1	9	..	..	..	1	..	3	1	2	..	2	1	..	2	..
24	Tulane University of Louisiana School of Medicine, New Orleans	19	1	4	19	2	..	..	3	..	4	1	..	..	..	3	..	5	..
	MARYLAND																		
25	Johns Hopkins University School of Medicine, Baltimore	4	1	..	15	1	6	..	3	..	1	..	3	3	..	3	3	1	2
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	..	2	..	23	..	1	4	3	..	6	..	..	3	1	1	..	1	..
	MASSACHUSETTS																		
27	Boston University School of Medicine	..	..	..	12	1	8	..	1	..	..	..	1	..	..	2	..	..	1
28	Harvard Medical School, Boston	2	1	..	37	3	9	1	2	..	6	1	7	2	1	3	5	..	8
29	Tufts College Medical School, Boston	..	1	..	16	1	11	..	4	..	..	1	2	1	..	..	..	2	11
	MICHIGAN																		
30	University of Michigan Medical School, Ann Arbor	..	2	..	28	1	1	..	1	..	1	..	6	4	1	1	2	..	1
31	Wayne University College of Medicine, Detroit	..	1	..	26	..	..	..	1	..	..	..	3	1	1	..	1	..	..
	MINNESOTA																		
32	University of Minnesota Medical School, Minneapolis	..	7	..	54	13	1	..	1	..	1	2	2	2	3	2	..	..	..
	MISSOURI																		
33	St. Louis University School of Medicine	..	1	1	39	3	1	..	1	..	1	2	9	8	4	3	2	1	..
34	Washington University School of Medicine, St. Louis	..	4	1	25	2	1	..	3	..	6	..	12	7	5	4	2	2	..
	NEBRASKA																		
35	Creighton University School of Medicine, Omaha	1	1	..	14	2	1	..	..	..	..	1	2	1	5	1	..	..	..
36	University of Nebraska College of Medicine, Omaha	1	3	1	33	16	..	..	1	..	..	..	2	2	7	5	1	2	..
	NEW YORK																		
37	Albany Medical College	..	..	..	5	1	3	..	5	..	2	..	4	1	..	..	1	..	1
38	University of Buffalo School of Medicine	..	2	..	15	..	5	..	..	..	2	..	3	..	1	..	..	1	..
39	Columbia University College of Physicians and Surgeons, New York	..	2	1	26	2	9	..	8	..	..	..	5	1	..	1	4	2	2
40	Cornell University Medical College, New York	1	..	..	22	1	14	..	1	..	..	1	6	1	..	2	2	..	3
41	New York Medical College, Flower and Fifth Avenue Hospitals	..	..	..	31	2	21	..	3	..	..	..	6	..	2	1	..	..	3
42	New York University College of Medicine	..	2	..	37	1	13	..	2	..	1	..	3	1	..	1	..	2	3
43	State University of New York College of Medicine at New York City, Brooklyn	..	1	..	26	1	9	..	3	..	..	..	1	4	2	1	..	..	..
44	University of Rochester School of Medicine and Dentistry	..	1	..	24	2	4	1	..	..	1	..	..	..	..	..	1	..	..
45	State University of New York at Syracuse College of Medicine	..	..	..	13	1	3	..	2	..	3	1	1	..	..	..	..	1	..
	NORTH CAROLINA																		
46	Duke University School of Medicine, Durham	3	1	..	10	1	2	1	4	..	8	..	2	..	..	2	..	..	..
47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	1	..	..	1	2	..	..	1	..	3	..	..	..	1	..	..	..	..
	OHIO																		
48	University of Cincinnati College of Medicine	2	2	..	30	..	1	..	..	..	1	1	5	4	..	..	5	1	..
49	Western Reserve University School of Medicine, Cleveland	..	3	..	25	4	1	..	..	..	1	..	2	2	..	..	..	..	..
50	Ohio State University College of Medicine, Columbus	..	..	..	16	2	1	..	..	..	1	..	3	6	1	1	3	1	..
	OKLAHOMA																		
51	University of Oklahoma School of Medicine, Oklahoma City	1	..	..	17	3	..	..	..	..	2	1	..	1	1	7	..	2	..
	OREGON																		
52	University of Oregon Medical School, Portland	..	1	..	34	1	..	..	..	..	..	4	..	..	..	..	1	..	..
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska, Hawaii, Puerto Rico, Guam, and the Canal Zone	Totals	Marginal Number
..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	1
1	..	2	..	3	4	..	..	..	..	2	..	..	2	..	1	7	..	2	1	1	1	2	14	..	..	..	1	..	1	..	..	69	2
5	4	5	..	2	3	1	2	..	..	..	..	4	1	..	5	..	4	2	..	1	..	1	4	1	..	2	4	2	2	4	3	99	3
1	..	..	1	..	..	..	..	2	..	1	..	1	..	..	..	..	..	1	..	..	1	..	..	1	..	..	1	..	..	1	1	17	4
..	..	..	4	..	..	..	1	1	..	..	..	3	1	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	20	5
1	1	..	1	..	..	1	..	..	..	1	1	5	1	..	1	..	1	1	..	..	..	..	2	1	..	1	1	..	1	..	..	29	6
1	..	1	..	..	1	1	3	..	..	1	3	..	..	..	1	..	2	..	..	..	..	1	1	3	..	..	..	1	..	1	..	53	7
2	6	4	2	..	3	..	..	..	2	2	..	21	2	1	4	..	2	4	2	..	..	..	..	..	..	2	5	1	1	..	1	110	8
26	12	7	1	..	2	..	..	..	..	20	..	34	1	..	4	..	..	18	5	1	..	..	..	..	..	14	2	1	..	..	3	207	9
36	..	5	4	..	1	..	1	..	..	5	..	11	..	1	5	..	1	5	..	2	1	2	1	2	..	11	..	6	2	3	1	174	10
4	..	1	..	..	2	..	..	..	..	2	..	16	1	..	7	2	..	2	..	1	..	..	2	..	..	3	..	..	..	..	..	78	11
2	..	2	1	..	..	..	..	..	..	1	1	1	2	..	1	..	..	2	..	3	..	2	2	..	..	1	1	..	..	..	..	33	12
..	..	1	2	1	..	..	..	..	..	..	..	1	5	..	2	..	..	1	..	5	..	3	3	..	..	2	..	..	..	..	..	38	13
1	..	..	..	1	1	..	..	..	..	6	..	33	..	..	5	..	..	3	..	..	..	..	1	..	..	..	1	..	1	..	..	80	14
3	..	3	7	1	4	3	1	..	..	..	1	5	..	1	13	3	7	1	..	..	..	..	7	3	..	1	7	1	9	..	1	207	15
..	1	4	1	1	2	..	1	..	..	3	1	3	..	1	5	2	..	3	1	..	1	..	3	2	..	..	1	..	3	..	4	98	16
2	2	3	..	..	..	..	..	..	..	1	..	4	1	..	3	..	1	2	..	..	1	..	2	1	..	..	1	1	..	1	..	74	17
1	1	8	..	1	2	..	3	..	..	2	..	4	..	1	12	1	2	5	..	1	1	..	2	..	..	2	4	..	4	..	..	178	18
2	2	13	5	..	4	..	1	..	..	1	4	4	1	..	16	2	3	3	..	..	..	2	8	1	..	1	2	1	2	..	1	146	19
2	..	5	4	1	3	3	2	..	1	4	3	4	1	..	3	1	2	6	..	..	1	..	3	1	..	..	2	..	4	..	..	123	20
..	2	2	2	..	14	2	..	..	..	..	1	1	..	..	2	2	..	1	..	..	..	1	5	1	..	2	2	..	1	3	..	91	21
..	2	4	4	2	8	1	..	..	..	2	..	1	4	..	11	2	..	5	..	4	..	4	3	1	1	4	..	3	1	..	..	116	22
3	..	1	3	8	1	..	..	..	..	..	..	4	2	..	..	2	..	1	..	3	..	1	9	..	..	2	1	1	1	..	1	69	23
3	5	3	7	13	1	..	..	..	..	3	3	4	2	1	2	2	2	2	..	2	..	7	28	..	..	1	..	..	..	1	..	148	24
4	5	3	1	1	1	1	..	1	..	3	1	17	5	1	10	..	2	3	..	3	..	1	1	2	..	4	7	4	..	..	..	127	25
7	6	1	3	..	..	..	..	..	1	3	3	11	4	..	7	..	..	8	..	3	..	..	3	..	..	5	..	8	1	..	4	123	26
3	50	6	2	..	..	..	..	..	..	2	1	15	..	..	3	..	1	4	3	..	..	1	2	..	1	2	..	..	..	..	2	124	27
1	58	6	5	..	6	1	..	..	3	7	1	37	5	..	14	..	..	12	2	..	..	5	1	1	..	4	8	..	2	..	5	272	28
5	76	1	3	..	1	1	..	..	7	2	1	12	2	1	5	..	1	2	2	..	..	1	..	..	1	2	1	..	1	1	..	179	29
1	2	4	1	..	1	..	..	..	..	2	3	8	1	..	14	..	3	1	..	1	1	1	4	2	..	..	2	1	5	..	..	107	30
..	1	1	2	..	..	1	..	..	1	..	1	3	1	..	4	..	..	..	..	..	..	1	2	..	..	1	..	..	1	..	..	34	31
3	1	1	7	1	1	7	..	2	1	2	1	9	2	..	3	..	7	4	2	1	1	..	3	..	..	2	9	..	5	..	..	163	32
3	..	4	1	1	..	2	1	..	..	3	1	4	..	1	28	1	..	3	1	..	..	1	3	..	..	1	9	1	3	..	..	148	33
6	5	1	1	..	..	..	..	..	..	1	1	3	2	..	6	3	1	4	..	..	..	..	4	3	..	2	4	1	3	..	..	125	34
1	..	1	5	..	7	..	11	..	..	1	1	1	..	..	1	1	3	1	..	..	1	..	1	..	..	..	5	..	2	..	5	77	35
4	..	1	9	..	4	1	5	1	..	..	1	..	1	1	3	..	8	1	..	..	3	..	5	2	..	1	1	1	2	5	..	134	36
4	5	3	1	..	..	..	..	..	1	1	..	49	1	1	2	..	..	5	1	1	..	..	..	..	2	..	..	..	..	..	1	101	37
..	5	1	..	..	..	..	..	..	..	1	..	48	..	..	5	..	..	3	1	..	..	2	2	..	..	2	1	..	2	1	..	103	38
7	12	5	2	..	2	1	1	1	2	20	1	90	1	..	3	..	1	6	..	..	1	..	..	1	3	3	2	3	2	..	2	235	39
1	6	3	2	..	2	..	1	..	2	11	..	54	2	..	4	1	1	5	..	1	1	1	2	1	..	2	2	1	1	..	1	162	40
2	10	..	3	..	..	..	..	..	2	22	..	84	3	1	5	..	3	8	1	..	..	..	1	..	..	3	1	2	1	..	1	225	41
3	7	4	1	..	..	1	1	..	3	22	2	82	1	..	5	..	..	11	1	..	..	1	1	1	..	4	..	1	1	..	..	219	42
..	6	1	2	..	..	1	..	..	..	17	1	80	..	2	4	2	1	7	..	1	..	1	1	1	2	2	3	..	1	..	2	186	43
..	7	1	2	1	1	..	..	1	..	3	1	31	1	..	6	..	3	4	..	..	..	1	1	..	..	..	4	1	1	..	1	105	44
3	3	..	1	..	..	..	..	..	..	1	..	21	1	1	2	..	..	3	..	..	..	1	..	..	1	..	1	..	2	..	1	67	45
4	1	3	1	1	2	1	..	..	1	3	..	3	30	..	6	..	..	3	..	3	..	7	..	1	..	3	2	2	1	..	..	112	46
..	2	..	1	1	..	..	..	..	..	..	..	1	..	1	2	..	..	1	..	4	..	3	1	..	..	3	..	..	..	..	..	29	47
2	3	7	1	..	3	..	..	1	..	5	1	..	2	..	1	..	..	3	..	..	..	..	3	..	..	1	4	2	2	..	..	93	48
2	1	5	..	..	..	1	..	..	..	1	..	3	4	..	1	..	..	5	..	..	..	2	2	1	..	..	1	1	1	..	..	69	49
1	1	5	4	..	1	..	..	..	..	..	1	2	..	..	..	..	..	2	1	..	1	1	4	..	..	..	..	1	1	..	1	62	50
1	..	..	3	1	1	..	1	..	..	1	..	..	..	..	..	1	4	..	..	2	..	..	16	..	..	..	1	1	..	..	..	68	51
..	..	..	..	..	..	2	..	..	..	..	..	2	..	..	1	..	14	..	..	..	..	..	..	..	..	..	20	..	..	..	1	81	52
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	

TABLE 11.—CANDIDATES LICENSED BY

Marginal Number	SCHOOL	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	PENNSYLVANIA																		
53	Hahnemann Medical College and Hospital of Philadelphia	1	1	..	23	..	1	1	4	..	1	..	3	3	..	1	1	..	1
54	Jefferson Medical College of Philadelphia	1	1	1	21	3	2	2	..	..	1	1	2	3	..	1	1	1	1
55	Temple University School of Medicine, Philadelphia	..	1	1	26	2	6	1	3	..	3	..	2	..	..	1	4	..	..
56	University of Pennsylvania School of Medicine, Philadelphia	2	3	1	18	3	4	..	1	..	1	1	5	2	1	1	..	2	3
57	Woman's Medical College of Pennsylvania, Philadelphia	..	1	..	6	1	4	..	..	..	..	..	..	..	1	..	..	..	..
58	University of Pittsburgh School of Medicine	..	1	1	15	2	..	1	..	..	..	..	5	1	..	..	..	1	..
	SOUTH CAROLINA																		
59	Medical College of South Carolina, Charleston	1	..	..	2	1	1	..	1	..	6	..	..	..	..	..	1	..	..
	TENNESSEE																		
60	University of Tennessee College of Medicine, Memphis	7	..	10	9	..	2	..	2	..	7	..	1	3	..	2	11	8	..
61	Meharry Medical College, Nashville	3	..	..	21	..	..	..	2	..	3	..	..	4	..	3	1	..	..
62	Vanderbilt University School of Medicine, Nashville	7	..	1	10	1	2	1	..	..	5	..	..	1	1	..	2	3	..
	TEXAS																		
63	Southwestern Medical School of the University of Texas, Dallas	..	..	1	6	2	1	..	..	..	1	1	..	..	1	1	1	..	..
64	University of Texas School of Medicine, Galveston	1	2	1	13	..	..	..	..	..	1	..	..	2	..	3	1	3	1
65	Baylor University College of Medicine, Houston	1	1	2	11	1	1	..	..	..	..	..	1	..	..	1	1	2	..
	UTAH																		
66	University of Utah School of Medicine, Salt Lake City	..	1	..	14	..	1	..	..	..	..	5	..	1	1	1	1	1	..
	VERMONT																		
67	University of Vermont College of Medicine, Burlington	..	..	..	4	1	8	..	1	..	1	..	1	..	1	..	..	..	2
	VIRGINIA																		
68	University of Virginia Department of Medicine, Charlottesville	2	1	1	12	1	1	..	4	..	3	..	..	1	1	..	5	2	..
69	Medical College of Virginia, Richmond	2	..	..	4	..	1	..	..	..	2	..	..	2	..	..	4	2	..
	WASHINGTON																		
70	University of Washington School of Medicine, Seattle	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	WISCONSIN																		
71	University of Wisconsin Medical School, Madison	2	..	..	26	3	..	..	1	..	..	..	2	3	2	5	1	..	..
72	Marquette University School of Medicine, Milwaukee	..	..	..	22	1	..	..	..	..	..	1	7	1	1	1	1	1	..
	CANADA																		
73	University of Alberta Faculty of Medicine, Edmonton	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
74	University of Manitoba Faculty of Medicine, Winnipeg	..	1	..	3	..	..	..	..	..	..	1	..	1	..	..	..	..	..
75	Dalhousie University Faculty of Medicine, Halifax	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..
76	Queen's University Faculty of Medicine, Kingston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
77	University of Ottawa Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
78	University of Western Ontario Faculty of Medicine, London	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	..
79	University of Toronto Faculty of Medicine	..	1	..	7	1	..	..	..	..	..	..	1	..	..	..	..	..	..
80	McGill University Faculty of Medicine, Montreal	..	3	..	7	..	3	..	..	..	1	..	1	1	..	..	..	2	1
81	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
82	Laval University Faculty of Medicine, Quebec	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	OTHERS																		
83	Foreign medical faculties	..	..	..	..	..	9	..	6	..	2	..	..	..	3	..	..	..	2
84	Extinct medical schools	..	5	1	4	1	1	..	1	..	..	1	1	4	..	..	2	..	1
85	Unapproved medical schools	..	..	..	8	..	..	..	..	..	1	1	..	..	..	..	..	..	..
86	Schools of osteopathy	..	..	..	..	15	..	4	..	..	..	..	..	10	..	..	..	..	..
87	Totals	92	96	39	1,437	143	214	19	165	0	113	43	219	144	86	86	91	70	50
	Marginal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

possessions was 3,855. The figure represents an increase of 799 in comparison with the net increase in 1952.[1]

In analyzing table 12, it can be noted that New York had the greatest number of first licentiates, 959. Four states added more than 400 to their physician population, namely, California 547, Illinois 531, Ohio 471, and Pennsylvania 456. Increases as compared with 1952 [1] occurred in 27 states.

The 7,276 licentiates representing additions to the medical profession in the last calendar year included 5,388 who secured their licenses by examination and 1,888 by endorsement of credentials. The latter were mainly physicians certified by the National Board of Medical Examiners.

Increases in the physician population arranged in nine geographic divisions in the United States are shown in table 13. The East North Central, Middle Atlantic, and South Atlantic groups had the greatest number of first licentiates, 1,655, 1,529, and 1,085 respectively. More than 500 were added in three other groups: West North Central, 796; Pacific 693; and West South Central, 534. The New England states added 411, the East South Central states 352, the Mountain states 163, and the territories and outlying possessions 58.

In the past 19 years (1935-1953) 119,510 physicians have been added to the medical profession, as determined by the number who received licenses for the first time. Figures for each year during this period are presented in table 14. Of the 119,510 additions, 101,082 were licensed after a successful written examination and 18,428 by reciprocity or endorsement of credentials. The total number of licenses issued in the same period was 207,744.

Estimated figures indicate that on Dec. 31, 1953, the total number of physicians in continental United States was 218,522, of whom 156,333 were estimated as in private practice. The figure includes 6,677 licensed physicians engaged in full-time research and teaching and physicians employed by insurance companies, industries, and health departments. It also includes 29,161 interns and residents in hospitals and those engaged in hospital administration, 9,311 physicians retired or not in practice, and 17,040 physicians in the government services.

1. J. A. M. A. 152: 427 (May 30) 1953.

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska, Hawaii, Puerto Rico, Guam, and the Canal Zone	Totals	Marginal Number
3	3	1	1	..	1	..	..	..	2	25	1	20	..	..	10	2	..	25	..	..	..	..	2	..	2	3	2	3	..	..	3	150	53
8	3	4	2	1	2	..	..	2	..	11	1	21	2	..	5	..	..	17	1	2	..	3	2	1	1	5	3	2	..	..	3	144	54
5	3	5	4	..	2	..	..	1	..	10	..	11	2	..	14	1	1	55	..	1	2	3	7	4	..	6	3	6	2	2	3	203	55
7	6	3	8	..	1	..	1	..	1	19	..	19	1	..	5	1	..	26	..	4	..	1	4	..	..	1	3	2	2	2	1	166	56
..	2	2	1	..	..	..	..	..	..	6	..	4	..	..	..	..	..	5	..	..	..	..	..	..	..	..	1	..	..	..	2	36	57
2	2	1	2	..	..	..	1	1	..	..	..	4	2	..	9	1	1	3	..	1	..	1	3	1	..	1	2	6	1	..	..	72	58
..	..	1	..	..	1	..	..	..	..	..	..	1	4	..	..	..	..	1	..	..	..	1	2	..	..	1	..	..	..	..	..	25	59
6	1	..	3	9	2	1	..	..	..	2	..	3	2	..	4	..	2	3	..	4	..	5	10	..	..	4	1	1	..	..	..	125	60
1	..	3	3	..	3	..	..	..	..	2	..	5	2	..	8	..	..	1	..	1	..	..	2	..	..	5	1	..	1	..	..	75	61
1	1	2	2	5	1	1	..	..	..	..	..	4	2	1	3	2	..	2	..	2	..	2	2	..	..	1	..	1	3	..	1	73	62
..	..	2	1	..	2	..	..	..	..	..	2	..	..	..	..	2	..	..	..	..	..	..	1	..	..	1	1	..	..	..	..	27	63
..	1	..	5	..	1	1	..	..	..	1	..	3	..	..	2	5	..	2	..	..	..	1	..	..	..	1	..	..	..	..	1	52	64
..	..	..	2	..	1	..	1	..	..	..	1	3	..	..	1	5	1	..	..	..	..	2	..	..	..	..	3	..	..	..	..	42	65
..	1	..	..	..	..	1	1	..	..	..	..	3	..	..	1	..	1	1	..	..	..	..	1	12	..	..	..	..	..	1	..	49	66
..	8	3	..	..	..	..	..	..	..	4	..	22	1	..	4	..	..	3	1	1	..	2	..	..	16	1	..	..	..	..	..	85	67
2	1	1	1	1	..	..	..	..	..	2	..	6	6	..	2	..	..	7	..	1	..	5	1	..	..	..	..	3	..	..	1	74	68
3	..	2	2	..	1	1	1	..	1	3	1	4	20	..	3	..	..	3	..	7	1	6	2	..	..	4	..	5	2	..	..	89	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	6	70
1	2	1	1	..	1	1	1	..	..	2	1	2	1	..	6	..	..	1	..	..	..	..	..	..	..	2	1	..	6	..	1	76	71
1	1	3	2	1	2	1	1	..	..	3	2	6	..	1	3	..	1	3	..	1	1	..	3	..	..	..	2	1	10	1	..	86	72
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	3	73
..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	11	74
..	1	1	..	1	..	..	..	..	1	1	..	1	1	..	3	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	16	75
..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	76
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	77
..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	7	78
..	1	1	..	..	..	..	..	..	..	1	..	5	..	..	2	1	..	..	..	..	1	..	1	..	1	1	..	..	1	..	..	26	79
1	1	3	..	1	..	1	..	1	1	1	..	9	1	..	2	..	1	..	1	..	..	2	1	..	..	1	3	..	..	..	..	50	80
..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	81
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	82
..	1	5	..	..	..	..	1	..	1	25	4	15	2	..	36	1	..	..	..	..	..	1	..	..	..	..	4	..	..	..	3	121	83
1	..	3	1	1	1	1	1	..	..	..	..	..	2	..	2	..	1	1	..	..	..	1	2	1	..	3	1	..	1	..	1	47	84
..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	9	..	..	..	..	..	..	..	..	24	85
..	1	..	..	..	..	..	..	..	3	10	..	4	..	..	20	..	1	..	..	..	..	..	16	..	..	1	..	..	..	..	..	85	86
207	353	189	154	67	114	43	45	15	39	319	54	1,010	147	18	398	57	90	340	27	69	21	94	232	53	32	139	161	79	103	28	65	7,869	87
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	

Registration of Physicians, 1904-1953

A recapitulation of totals for 1953 and for all years since 1904 is included in table 15. This tabulation includes for each year the number of physicians examined and registered by written examination, the annual percentage of failures, the number registered annually by reciprocity or endorsement of credentials, and the total registered. The total number of physicians registered from 1904 to 1933 remained somewhat constant except in 1918, when 4,231 were licensed, the lowest registration in 50 years. This decrease was due to a sudden withdrawal of physicians from civilian life in World War I. After 1933 there was an upward trend for a time, followed by a decline in the years 1940 to 1943 inclusive. There was a noticeable increase in 1943 as the result of the accelerated medical curriculum and the efforts made to maintain civilian care during World War II at as high a level as possible while still providing for the needs of the military. In 1943 more physicians were registered than in any previous year.

The number registered in 1946 was 6,696 more than in 1943 and was greater than in any previous year. Separation from service of a large number of medical officers and their subsequent licensure by endorsement of credentials indicating their return to private practice in states other than those in which they were licensed accounts in large part for this increase. This increase in part was also occasioned by the licensure of recent graduates who had entered military service on completion of the internship and before securing state licensure.

In the years since 1946 the numbers registered have annually decreased until 1953, when an increase of 1,167 over the previous year was noted. While a decrease can be noted in the numbers registered in the years succeeding 1946 until the current report, they far exceed the prewar totals. The noticeable increase in the graduating classes of the medical schools of the United States accounts in considerable measure for the increase in 1953.

In 1904, the first year shown, the percentage of failures was 19.3. This was an era of proprietary medical schools. Beginning in 1913 the percentage of failures gradually dropped each year until 1930, when 5.7% failed. Beginning in 1936 the percentage of failures began to rise, reaching another peak, of 20.7% in 1940. This was the result of the increase in the number of foreign-trained physicians seeking licensure in the United States, many of

whom are not successful after repeated attempts at licensure examinations. Since 1942 the percentage of failures has been somewhat reduced, although it still reflects the unsuccessful attempts of foreign-trained physicians, graduates of unapproved medical schools, and schools of osteopathy to secure licensure.

This table again refers to examinations given annually rather than to persons examined.

Candidates Examined for Medical Licensure, 1949-1953

In table 16 are tabulated the number of candidates for medical licensure in the United States and its territories and outlying possessions for the five year period 1949-1953. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five years and the percentage of failures for five years are also given.

In this five year period 33,192 examinations were given; 29,188 were successful tests and 4,004, or 12%, resulted in failures. New York leads in the number of examinations given. In this state, 3,444 were examined, of whom 1,765, or 51.2%, failed. More than 2,000 examinations were also given in California, Florida, and Illinois and more than 1,000 in Louisiana, Michigan, Missouri, Pennsylvania, and Texas.

The greatest percentage of failures, 66.9% occurred in Massachusetts. The majority of those who failed in this state represent graduates of unapproved medical schools and schools of osteopathy. The number of failures in this state is decreasing since the unapproved schools whose graduates the licensing board was required by law to examine are no longer in operation. The State Approving Authority has furthermore ruled that students matriculating after Jan. 1, 1941, in insti-

TABLE 12.—*Licentiates Repesenting Additions to the Medical Profession, 1953*

	Examination	Reciprocity and Endorsement	Total
Alabama	52	4	56
Arizona	11	4	15
Arkansas	79	0	79
California	390	157	547
Colorado	86	21	107
Connecticut	14	89	103
Delaware	12	3	15
District of Columbia	11	64	75
Florida	84	..	84
Georgia	167	10	177
Idaho	3	3	6
Illinois	468	63	531
Indiana	156	7	163
Iowa	82	5	87
Kansas	114	6	120
Kentucky	16	9	25
Louisiana	11	0	11
Maine	21	13	34
Maryland	195	27	222
Massachusetts	21	184	205
Michigan	213	25	238
Minnesota	164	22	186
Mississippi	82	3	85
Missouri	267	11	278
Montana	4	0	4
Nebraska	83	8	91
Nevada	2	1	3
New Hampshire	3	11	14
New Jersey	41	73	114
New Mexico	1	0	1
New York	288	671	959
North Carolina	175	27	202
North Dakota	15	7	22
Ohio	393	78	471
Oklahoma	53	1	54
Oregon	57	4	61
Pennsylvania	302	154	456
Rhode Island	27	9	36
South Carolina	70	0	70
South Dakota	10	2	12
Tennessee	181	5	186
Texas	386	4	390
Utah	20	5	25
Vermont	0	19	19
Virginia	181	20	201
Washington	60	25	85
West Virginia	36	3	39
Wisconsin	245	7	252
Wyoming	1	1	2
Canal Zone	1	0	1
Guam	0	2	2
Hawaii	7	7	14
Puerto Rico	27	14	41
Totals	5,388	1,888	7,276

TABLE 13.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions, 1953*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	21	13	34
New Hampshire	3	11	14
Vermont	0	19	19
Massachusetts	21	184	205
Rhode Island	27	9	36
Connecticut	14	89	103
Total	86	325	411
Middle Atlantic			
New York	288	671	959
New Jersey	41	73	114
Pennsylvania	302	154	456
Total	631	898	1,529
East North Central			
Ohio	393	78	471
Indiana	156	7	163
Illinois	468	63	531
Michigan	213	25	238
Wisconsin	245	7	252
Total	1,475	180	1,655
West North Central			
Minnesota	164	22	186
Iowa	82	5	87
Missouri	267	11	278
North Dakota	15	7	22
South Dakota	10	2	12
Nebraska	83	8	91
Kansas	114	6	120
Total	735	61	796
South Atlantic			
Delaware	12	3	15
Maryland	195	27	222
District of Columbia	11	64	75
Virginia	181	20	201
West Virginia	36	3	39
North Carolina	175	27	202
South Carolina	70	0	70
Georgia	167	10	177
Florida	84	0	84
Total	931	154	1,085
East South Central			
Kentucky	16	9	25
Tennessee	181	5	186
Alabama	52	4	56
Mississippi	82	3	85
Total	331	21	352
West South Central			
Arkansas	79	0	79
Louisiana	11	0	11
Oklahoma	53	1	54
Texas	386	4	390
Total	529	5	534
Mountain			
Montana	4	0	4
Idaho	3	3	6
Wyoming	1	1	2
Colorado	86	21	107
New Mexico	1	0	1
Arizona	11	4	15
Utah	20	5	25
Nevada	2	1	3
Total	128	35	163
Pacific			
Washington	60	25	85
Oregon	57	4	61
California	390	157	547
Total	507	186	693
Territories and Possessions			
Canal Zone, Guam, Hawaii, and Puerto Rico	35	23	58
Total	5,388	1,888	7,276

tutions not meeting the standards of this authority will not be eligible for licensure.

New York has a percentage of failures in the five year period of 51.2%. This state examines a considerable number of graduates of foreign medical schools, many of whom do not pass the first examination. Regulations permitting certain graduates of unapproved and osteopathic schools to the licensure examination in New York also contributed to its high percentage of failures.

In summary, 5 states had more than 20% failures in five years, 6 states had more than 10%, 9 states more than 5%, and 23 states less than 5%. Seven states, Kentucky, Minnesota, Montana, Tennessee, Washington, Wisconsin, and Wyoming, had no failures in five years.

The annual percentage of failures for all boards has varied from 11.3% to 13%. The highest percentage was in 1953.

TABLE 14.—*Licentiates Representing Additions to the Medical Profession, 1935-1953*

Year	Examination	Reciprocity and Endorsement	Total
1935	5,099	411	5,510
1936	5,548	629	6,177
1937	5,812	612	6,424
1938	5,759	501	6,260
1939	5,584	460	6,044
1940	5,432	455	5,887
1941	5,241	474	5,715
1942	5,560	454	6,014
1943	5,586	372	5,958
1944	6,495	470	6,965
1945	4,979	769	5,748
1946	5,362	1,608	6,970
1947	5,273	1,617	6,890
1948	4,942	1,694	6,636
1949	4,260	1,616	5,876
1950	4,609	1,393	6,002
1951	4,985	1,288	6,273
1952	5,168	1,717	6,885
1953	5,388	1,888	7,276
Totals	101,082	18,428	119,510

The foregoing figures represent examinations given and not persons examined. A candidate who fails more than once in a state in a given year is counted as one failure, but, should he again fail in a succeeding year, this fact is computed among the failures for that year. In compiling the tabulations in this study, a successful candidate securing a license in more than one state in a given year is counted in both states and also counted if he passed at examinations in later years. The totals in this table give only a fair approximation of the numbers of physicians added to the profession after written examination during the last five years. Table 12 gives the exact compilations of the number of physicians who constitute new additions to the medical profession.

Graduates of Approved Schools and Others Registered, 1922-1953

In table 17, the number of physicians registered are grouped in two categories, namely, graduates of approved medical schools and others. In the computation of these figures, schools rated as Class A and B by the Council on Medical Education and Hospitals of the American Medical Association since 1907 are classified as approved. In the column headed "Others" are included persons who graduated prior to 1907, when the first classification of medical schools was made by the Council, graduates of foreign faculties of medicine, Class C graduates, osteopaths given recognition by medical licensing boards, and graduates of schools not approved by the Council. In 1928 the classification of medical schools in categories of A, B, and C by the Council was discontinued, and a list of approved medical schools has since been maintained. Medical schools not meeting the standards of the Council since 1928 have been considered as unapproved institutions.

In 1953 there were 14,412 candidates registered, of whom 13,189 (91.5%) represented graduates of approved schools and 1,223 (8.5%) were in the second group. In the 32 years recorded in this table, 300,612 were registered, including 271,112 approved graduates, 90.2%, and 29,500 others, 9.8%.

TABLE 15.—*Registration of Physicians, 1904-1953*

Year	Examined	Passed	Failed, %	Reciprocity or Endorsement	Total Registered
1904	7,056	5,693	19.3	1,005	6,698
1905	7,178	5,688	20.8	394	6,082
1906	8,040	6,373	20.7	1,502	7,875
1907	7,279	5,731	21.3	1,427	7,158
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,011	5,719	18.4	1,640	7,359
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,273	6,740
1913	6,453	5,253	18.6	1,292	6,545
1914	5,579	4,379	21.5	1,439	5,818
1915	5,334	4,507	15.5	1,399	5,906
1916	4,878	4,151	14.9	1,353	5,504
1917	4,754	4,085	14.0	1,360	5,445
1918	3,667	3,184	13.2	1,047	4,231
1919	4,750	4,074	14.2	2,546	6,620
1920	4,796	4,002	15.3	2,558	6,620
1921	4,825	4,228	12.4	2,186	6,414
1922	4,031	3,539	12.2	2,073	5,612
1923	4,727	4,028	14.8	2,405	6,433
1924	5,392	4,756	11.8	1,923	6,679
1925	6,002	5,450	9.2	1,861	7,311
1926	5,770	5,314	7.9	1,955	7,269
1927	5,389	5,002	7.2	2,176	7,178
1928	5,458	5,090	6.7	2,228	7,318
1929	5,629	5,282	6.2	2,420	7,702
1930	5,571	5,255	5.7	2,366	7,621
1931	5,611	5,263	6.2	2,211	7,476
1932	5,675	5,247	7.6	1,886	7,133
1933	5,673	5,244	7.6	1,989	7,233
1934	6,145	5,628	8.4	2,161	7,789
1935	6,443	5,859	9.1	2,194	8,053
1936	6,918	6,224	10.0	2,773	8,997
1937	7,334	6,604	10.0	3,205	9,809
1938	7,461	6,589	11.7	2,956	9,545
1939	7,754	6,493	16.3	2,872	9,365
1940	7,926	6,291	20.7	2,866	9,157
1941	7,589	6,057	19.7	2,762	8,819
1942	7,223	6,120	15.4	2,469	8,589
1943	8,403	7,480	10.9	2,340	9,829
1944	6,817	6,011	11.8	2,596	8,607
1945	5,930	5,343	9.9	3,022	8,965
1946	7,610	6,856	9.9	9,669	16,525
1947	7,164	6,414	10.5	7,701	14,115
1948	6,624	5,904	10.8	7,595	13,499
1949	5,963	5,219	12.5	6,929	12,148
1950	6,203	5,481	11.6	6,755	12,236
1951	6,473	5,716	11.7	6,225	11,941
1952	7,028	6,229	11.3	7,016	13,245
1953	7,425	6,543	13.0	7,869	14,412

Graduates of Unapproved Medical Schools Registered, 1949-1953

Graduates of institutions that were classified by the Council on Medical Education and Hospitals of the American Medical Association as unapproved were registered in 26 states, the District of Columbia, and the territories and outlying possessions in the past five years. Figures are reported separately in table 18 for those licensed after written examination and those licensed by reciprocity or endorsement of credentials. The table also includes a column combining the figures for these two groups. In the main they represent five schools more recently in operation, all but one of which are now closed. The latter institution has obtained the status of an approved school. At present there is no medical school in complete operation that is not approved by the Council.

There were 413 graduates of unapproved medical schools registered in the five year period (1949-1953), 288 by examination and 125 by endorsement of credentials. In 1953 there were 44 licensed in 15 states and the territories, 20 by examination and 24 by reciprocity.

Illinois, which accepted for licensure the graduates of one school not approved by the Council until late in 1948, Florida, New York, and Texas which have made certain concessions, and Massachusetts licensed the largest number of graduates of unapproved medical schools. In the latter state, the institutions referred to in the table were not granted approval by the State Approving Authority. Matriculants after Jan. 1, 1941, are not eligible for licensure. The number being licensed in all of these states has been decreasing.

TABLE 16.—*Candidates Examined, 1949-1953*

	1949		1950		1951		1952		1953		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	% F
Alabama	46	1	39	0	60	2	66	1	56	0	267	4	1.4
Arizona	22	0	8	1	14	0	14	0	12	0	70	1	1.4
Arkansas	52	0	74	0	83	4	79	0	81	0	369	4	1.0
California	492	57	543	37	500	54	558	51	582	55	2,675	254	8.6
Colorado	78	0	76	0	84	1	85	0	109	1	432	2	0.4
Connecticut	29	15	29	19	34	16	17	21	38	25	147	96	39.5
Delaware	21	0	23	0	13	1	17	2	24	0	98	3	3.0
District of Columbia	30	1	24	3	27	2	15	0	13	2	109	8	6.8
Florida	308	19	325	46	374	53	422	51	340	152	1,769	321	15.3
Georgia	109	4	147	1	147	0	149	0	172	0	724	5	0.6
Idaho	38	1	1	0	8	0	10	0	6	0	63	1	1.6
Illinois	367	67	399	60	419	91	510	183	544	233	2,239	634	22.0
Indiana	98	4	112	3	116	3	173	2	162	1	661	13	1.9
Iowa	57	0	86	1	81	0	118	2	128	0	470	3	0.6
Kansas	99	1	96	1	92	0	93	4	117	1	497	7	1.3
Kentucky	86	0	88	0	104	0	124	0	119	0	521	0	0.0
Louisiana	164	1	190	1	217	0	218	0	227	0	1,016	2	0.1
Maine	25	4	19	1	15	6	15	3	25	8	99	22	18.2
Maryland	172	17	183	10	174	14	218	13	234	19	976	73	6.9
Massachusetts	41	92	26	71	35	79	31	55	39	51	172	348	66.9
Michigan	164	0	195	0	221	1	246	2	251	0	1,077	3	0.2
Minnesota	184	0	201	0	166	0	220	0	210	0	981	0	0.0
Mississippi	35	5	64	1	77	0	83	0	84	0	343	6	1.7
Missouri	198	0	206	0	230	0	238	0	268	2	1,140	2	0.1
Montana	8	0	5	0	3	0	8	0	4	0	28	0	0.0
Nebraska	52	4	96	3	96	6	93	4	83	1	420	18	4.1
Nevada	4	1	0	0	0	0	0	0	3	0	7	1	12.5
New Hampshire	7	1	6	1	6	3	7	2	7	3	33	10	23.2
New Jersey	76	9	41	11	54	11	48	6	48	10	267	47	15.0
New Mexico	4	1	2	0	2	0	3	0	6	0	17	1	5.6
New York	411	397	290	397	339	337	305	305	334	329	1,679	1,765	51.2
North Carolina	88	0	97	1	125	1	141	0	181	0	632	2	0.3
North Dakota	24	0	35	3	26	8	25	1	24	0	134	12	8.2
Ohio	262	6	326	19	371	46	371	30	420	40	1,750	141	7.4
Oklahoma	47	1	82	0	66	0	53	0	1	0	249	1	0.4
Oregon	47	4	38	2	42	0	29	1	60	2	216	9	3.9
Pennsylvania	396	3	326	2	277	1	334	4	326	0	1,659	10	0.5
Rhode Island	15	1	12	3	12	0	32	1	31	4	102	9	8.1
South Carolina	43	1	59	0	63	0	64	0	71	0	300	1	0.3
South Dakota	10	0	20	0	23	3	15	0	10	2	78	5	6.0
Tennessee	177	0	142	0	155	0	204	0	182	0	860	0	0.0
Texas	184	10	277	16	305	8	317	20	403	13	1,486	67	4.3
Utah	30	0	29	0	24	1	26	0	24	0	133	1	0.7
Vermont	11	4	15	1	4	0	9	0	7	2	46	7	13.2
Virginia	109	5	138	1	168	2	149	29	164	13	728	50	6.4
Washington	72	0	60	0	54	0	58	0	60	0	304	0	0.0
West Virginia	61	0	42	0	26	0	18	1	45	0	192	1	0.5
Wisconsin	109	0	130	0	132	0	150	0	153	0	674	0	0.0
Wyoming	1	0	2	0	4	0	1	0	1	0	9	0	0.0
U. S. Territories and Possessions	56	7	57	6	48	3	55	5	54	13	270	34	11.1
Total Examined	5,963		6,203		6,473		7,028		7,525		33,192		
Passed	5,219		5,481		5,716		6,229		6,543		29,188		
Failed	744		722		757		799		982		4,004		
Percentage Failed	12.5		11.6		11.7		11.3		13.0		12.0		

Graduates of Schools of Osteopathy Registered by Medical Examining Boards, 1949-1953

The number of graduates of schools of osteopathy granted the privilege of practicing medicine or surgery or both by 18 medical examining boards for five years (1949-1953) is given in table 19. There have been 944 such persons registered, 681 by examination and 233 without written examination. In 1953 there were 262 so registered, 177 by examination and 85 by reciprocity.

The situation that obtains in these states providing for the licensure of osteopaths or others than graduates of approved medical schools by the medical examining board is as follows. In 1952 Alabama registered a graduate of a school of chiropractic. In Colorado an osteopath receives a license to practice medicine. In Connecticut any registered osteopath may obtain the right to practice medicine or surgery or both according to the type of examination taken. Osteopaths in Delaware may be licensed as osteopathic physicians. The District of Columbia grants osteopaths the privilege of practicing surgery. Under an amendment to the medical practice act in 1945, osteopaths in Indiana are permitted to practice medicine and surgery. Persons who were licensed in osteopathy before 1945 are authorized to practice osteopathy, surgery, and obstetrics.

TABLE 17.—*Graduates of Approved Schools and Others Registered, 1922-1953*

	Graduates of Approved Schools		Others		
Year	Number	% of Total	Number	% of Total	Totals
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,687	85.1	992	14.9	6,679
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	768	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,003	91.9	699	9.0	7,702
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,676	92.1	457	6.3	7,133
1933	6,774	93.7	459	6.3	7,233
1934	7,172	92.1	617	7.9	7,789
1935	7,360	91.3	693	8.5	8,053
1936	7,934	88.1	1,063	11.8	8,997
1937	8,391	85.5	1,418	14.4	9,809
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,781	85.0	1,376	15.0	9,157
1941	7,770	87.9	1,049	11.9	8,819
1942	7,290	84.9	1,299	15.1	8,589
1943	8,640	87.9	1,189	12.2	9,829
1944	7,737	89.8	870	10.1	8,607
1945	8,233	91.8	732	8.1	8,965
1946	15,692	94.9	835	5.1	16,527
1947	13,097	93.0	1,018	7.0	14,115
1948	12,791	94.8	708	5.2	13,499
1949	11,378	93.7	770	6.3	12,148
1950	11,562	94.0	734	6.0	12,236
1951	11,027	92.3	914	7.7	11,941
1952	12,198	92.1	1,047	7.9	13,245
1953	13,189	91.5	1,223	8.5	14,412
Totals	271,112	90.2	29,500	9.8	300,612

In Massachusetts the medical practice act by definition includes osteopathy in the practice of medicine and does not differentiate the type of license issued to an osteopathic physician. A law passed in Nebraska in 1943 provided that osteopaths might make application for a license to practice medicine and surgery by examination if application was made prior to 1948.

In New Hampshire osteopaths are granted the right to practice medicine and surgery. New Jersey provides that osteopaths licensed prior to Nov. 1, 1941, who have served for a period of two years as an intern or resident surgeon in an approved osteopathic or medical hospital, or have completed a postgraduate course of two years in a college of osteopathy or medicine approved by the board, or have had at least three years of practice in a hospital approved by the board, can be admitted to an examination in pharmacology, therapeutics, and surgery. If successful, they can obtain a license to practice medicine and surgery.

In New York a law approved April 10, 1946, provides that any osteopathic licentiate who had obtained the addi-

tional right to use instruments for minor surgical procedures and to use anesthetics, antiseptics, narcotics, and biological products, or any applicant who had met or would meet all the preliminary and professional requirements as of Sept. 1, 1936, and had satisfactorily passed or would pass the regular licensing examination would be granted the right to practice medicine without limitation.

Osteopaths in Ohio who obtained their license under an act passed in 1943 are given the right to practice osteopathic medicine and surgery. In Oregon osteopaths are granted the right to practice in the subjects covered by the examination. In South Dakota, osteopaths may be issued a license to practice osteopathic medicine, surgery, and obstetrics, which is an unrestricted license. Texas issues only one license, which is unrestricted in scope. In Virginia osteopaths may obtain the right to use drugs and to perform surgery with instruments. The Wisconsin law, as amended in 1950, provides that an osteopath licensed in Wisconsin may obtain a license to practice medicine and surgery by completing a refresher course in materia medica and pharmacology consisting of not less than 64 hours of lecture and 60 hours of laboratory work and by passing an examination in these subjects. Osteopaths not licensed in the state may apply to take the same examination as physicians; if successful, they will be granted licenses to practice medicine and surgery. In Wyoming the statutes contain no specific provision for the licensing of osteopaths. The medical practice act provides that the certificate issued to all applicants shall be deemed a license to practice medicine in all branches in which the applicant has taken an examination.

TABLE 18.—GRADUATES OF UNAPPROVED MEDICAL SCHOOLS REGISTERED 1949-1953

	Examination						Reciprocity and Endorsement						Combined Totals
	1949	1950	1951	1952	1953	Totals	1949	1950	1951	1952	1953	Totals	
Arizona	..	..	..	..	..	..	1	..	2	..	..	3	3
Arkansas	..	1	..	..	..	1	..	..	..	..	..	..	1
California	..	2	..	..	..	2	..	5	..	..	8	13	15
Connecticut	..	..	..	..	..	..	..	..	..	1	..	1	1
District of Columbia	..	..	..	..	..	..	..	1	..	..	..	1	1
Florida	25	16	9	7	5	62	..	..	..	..	..	..	62
Georgia	1	1	1	..	1	4	3	..	1	1	1	6	10
Idaho	..	..	..	..	..	..	..	..	..	..	1	1	1
Illinois	41	5	2	..	..	48	..	..	..	..	..	..	48
Kentucky	2	..	..	..	..	2	..	..	..	..	..	..	2
Maine	..	..	..	..	..	..	2	1	1	1	..	5	5
Massachusetts	11	5	4	5	2	27	..	..	..	..	..	..	27
Michigan	..	..	..	..	..	..	..	1	1	1	..	3	3
Mississippi	..	1	1	..	..	2	..	..	..	..	..	..	2
Missouri	..	..	..	..	..	..	..	3	..	1	2	6	6
Nevada	..	..	..	..	..	..	..	..	..	2	..	2	2
New Jersey	..	..	..	..	3	3	..	..	..	..	..	..	3
New York	94	7	4	1	3	109	..	..	..	1	..	1	110
North Carolina	..	3	..	..	..	3	..	..	..	..	..	..	3
Ohio	1	1	..	..	..	2	..	..	..	..	1	1	3
Pennsylvania	..	1	1	2	..	4	..	..	..	1	1	2	6
Tennessee	..	..	..	..	..	..	1	..	..	..	1	2	2
Texas	..	..	..	..	..	..	..	2	45	18	9	74	74
Virginia	3	..	..	..	2	5	..	..	..	..	..	..	5
Washington	1	..	..	..	..	1	..	..	..	..	..	..	1
West Virginia	2	..	..	1	3	6	..	..	..	..	..	..	6
Wisconsin	..	..	..	..	..	..	..	..	1	2	..	3	3
Territories and possessions	3	2	1	..	1	7	..	..	1	..	..	1	8
Totals	184	45	23	16	20	288	7	13	52	29	24	125	413

TABLE 19.—GRADUATES OF SCHOOLS OF OSTEOPATHY REGISTERED BY MEDICAL BOARDS, 1949-1953

	Examination						Reciprocity and Endorsement						Combined Totals
	1949	1950	1951	1952	1953	Totals	1949	1950	1951	1952	1953	Totals	
Alabama	..	..	..	1	..	1	..	..	..	..	..	..	1
Colorado	5	8	10	5	8	36	..	..	..	3	15	18	54
Connecticut	1	4	1	1	2	9	..	..	..	..	..	..	9
Delaware	..	..	1	..	1	2	1	..	1	2	4	8	10
District of Columbia	..	1	..	..	..	1	1	1	1	..	..	3	4
Indiana	3	3	..	7	5	18	1	..	9	9	10	29	47
Massachusetts	..	..	2	..	..	2	3	3	6	6	1	19	21
Nebraska	1	..	..	..	..	1	..	..	..	..	..	..	1
New Hampshire	..	..	..	..	..	..	4	1	..	1	3	9	9
New Jersey	5	7	2	11	11	36	1	2	6	15	10	34	70
New York	11	34	45	30	47	173	2	3	..	5	4	14	187
Ohio	24	28	46	47	64	209	4	8	8	7	20	47	256
Oregon	..	..	..	..	..	..	5	..	..	1	1	7	7
South Dakota	..	1	..	..	..	1	..	1	1	..	..	2	3
Texas	15	35	37	41	32	160	9	5	15	21	16	66	226
Virginia	..	1	..	..	..	1	..	..	..	1	1	2	3
Wisconsin	1	4	11	8	7	31	1	..	..	2	..	3	34
Wyoming	..	..	..	..	..	..	..	1	..	1	..	2	2
Totals	66	126	155	157	177	681	32	25	47	74	85	263	944

Preprofessional Requirements of Licensing Boards

Since 1918 the minimum requirement of the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges has been two years of college training. In 1938 both these agencies recommended that at least three years of college work be required of all candidates for admission. In December, 1953, the Council's requirements were increased to three years of college training, to become effective for students entering medical school after Jan. 1, 1953. The present requirements of the Council as stated in the "Essentials of an Acceptable Medical School" are as follows:

1. Collegiate training in preparation for the study of medicine should provide the opportunity for a good general education, including the attainment of competence in English. It should include theoretical and laboratory courses in physics, biology, and inorganic and organic chemistry. At the present time the minimum requirements for admission to approved medical schools is three years of college training for the average student. For most students, four years is recommended in order to provide an opportunity to gain a broad educational experience. Rarely, a school will be justified in admitting a superior student under exceptional conditions after two years of college work.

2. Since it cannot in general be assumed that all who have satisfied these requirements merely in terms of hourly credits are fitted for the study of medicine, it is desirable that qualitative standards with reference to academic performance, character, motivation, and health also be imposed.

3. As a rule candidates should have received their preliminary education in institutions approved by accrediting agencies acceptable to the Council. Exception to this rule may be made in the case of applicants who have demonstrated superior ability. For the convenience of admitting officers the Council has compiled a list of colleges of arts and sciences approved by regional educational associations.

4. Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.[2]

TABLE 20.—*Requirements of Premedical Training by Medical Licensing Boards*

Two Years or More of College		
Alabama	Maryland†	Pennsylvania
Arizona	Massachusetts	Rhode Island
Arkansas	Michigan†	South Carolina†
California	Minnesota	South Dakota
Colorado*	Mississippi	Tennessee†
Connecticut	Missouri	Texas
Delaware	Montana	Utah
District of Columbia	Nebraska	Vermont
Florida†	Nevada†	Virginia
Georgia	New Hampshire	Washington
Idaho	New Jersey	West Virginia
Illinois	New Mexico	Wisconsin†
Indiana	New York	Wyoming
Iowa†	North Carolina†	Alaska
Kansas	North Dakota	Canal Zone
Kentucky	Ohio	Guam
Louisiana	Oklahoma	Hawaii
Maine	Oregon	Puerto Rico†

* Not specified by law.
† Three year college requirement.

All state licensing boards (table 20), with the exception of Colorado, require that an applicant for licensure must present evidence of having completed two years or more of college. The Colorado Board, however, reports that the premedical requirement is not specified by law. Nine states and Puerto Rico specify a three year college requirement.

Professional Educational Requirements of Licensing Boards

The medical practice acts or board regulations of several state medical licensing boards specify the length of the medical school course. In other states the law or ruling reads that the professional educational requirement accepted for approval by the Council on Medical Education and Hospitals of the American Medical Association or for membership in the Association of American Medical Colleges, or both, is the regulation for licensure. Table 21 outlines the requirement of each state in this respect. This table does not record the internship, which is a requirement for licensure by 33 boards.

2. Certain state boards of medical licensure, however, require completion of regular college courses in all required subjects.

Approval of Medical Schools

Seven states maintain their own list of approved medical schools in the United States. Two of these states accept the list of medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association and/or the Association of American Medical Colleges. Twenty-nine boards require applicants for licensure from medical schools in the United States or Canada to be graduates of medical schools approved by the Council. Two boards require membership in the Association of American Medical Colleges. Sixteen boards specify that schools must be approved by the Council and in membership in the Association of American Medical Colleges. In the majority of instances this requirement is specified in the medical practice act or is a formal regulation of the board. In only four instances is it an informal policy. In actuality, all approved medical schools presently are both approved by the Council and in membership in the Association of American Medical Colleges.

Required Internships

Five medical schools in the United States and five schools in Canada require that their students complete an internship. These schools are listed in table 22. For many years, however, more than 99% of all graduates have voluntarily served an internship, and a majority have had additional hospital training before entering practice.

One year of internship, as a prerequisite to licensure, is required by the licensing boards by 26 states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico. The internship requirement was added to the requirement for licensure in Kansas last year. Twelve boards specify that the internship must be a rotating service. New Jersey specifies that a two year residency in a specialty or one year of postgraduate work will meet the requirement of a rotating internship service. Michigan, which in previous years reported that it would accept a 24 month mixed or straight internship in lieu of a rotating service, did not so indicate in this year's report. Alaska will accept active practice for four years in lieu of the internship requirement. Those licensing boards that require an internship for licensure are listed in table 23.

Licensure Requirements for Interns and Residents in Hospitals

In the majority of states, physicians serving internships are not required to be licensed in the state in which the hospital where they are interning is located. Georgia, New Mexico, Wyoming, and Puerto Rico have this requirement. New Jersey permits a service of two years, Nevada issues a temporary certificate for one year, and Minnesota reports that licensure is not required if the internship is being served for the M.D. degree of the University of Minnesota. Nine boards require an intern to register with the board, namely, Colorado, Delaware, District of Columbia, Florida, Indiana, Massachusetts, Texas, Virginia, and West Virginia.

Twenty-one states and Puerto Rico require that physicians serving as residents in hospitals must be licensed in the state. In Connecticut and Maryland it is not a requirement of the licensing board but is customarily required by hospitals in those states, while Ohio reports that licensure is required if the resident assumes full responsibility and

receives pay for his services. Fourteen boards, while not requiring licensure, specify that licensure is recommended; they may grant temporary certificates during the period of residency or for a stipulated time, require residents to register with the board, or will permit service for a definite period without licensure. The regulations of each of the licensing boards that exact some requirement of those engaged in intern or residency training are given in table 24.

TABLE 21.—*Professional Educational Requirements by Medical Licensing Boards*

	Length of Medical School Academic Year					Total Time Spent in Medical School (Registration to Graduation)			
	Weeks	Months	Same as Approved Medical Schools	Same as A.A.M.C. and C.M.E. & H.*	Not Specified by Board	Weeks	Months Annual	Years	Same as A.A.M.C. and C.M.E. & H.*
Alabama	..	9	..	..	..	..	..	4	x
Arizona	..	9	..	..	..	..	..	4	..
Arkansas	..	9	..	..	..	..	36	..	..
California	..	..	..	..	x	..	..	4	..
Colorado	..	..	..	..	x	..	..	4	..
Connecticut	32	..	..	..	..	32	..	4	..
Delaware	..	..	..	..	x	..	28	4	..
District of Columbia	..	9	..	..	..	..	36	..	..
Florida	..	..	..	x	..	..	..	..	x
Georgia	..	9	..	..	..	..	..	4	..
Idaho	..	9	..	..	..	..	..	4	..
Illinois	..	9	..	..	..	..	40	..	..
Indiana	..	8	..	..	..	..	42	..	..
Iowa	..	9	..	..	..	..	36	..	..
Kansas	..	9	..	..	..	..	..	4	..
Kentucky	..	9	..	..	..	..	..	4	..
Louisiana	..	..	..	x	..	..	..	4	x
Maine	36	..	..	..	..	..	..	4	..
Maryland	..	..	..	x	..	..	..	..	x
Massachusetts	..	..	..	x	..	..	..	..	x
Michigan	..	9	..	..	..	..	36	..	..
Minnesota	36	..	..	..	..	..	..	4	..
Mississippi	32	..	..	..	..	..	..	4	..
Missouri	32	..	..	..	..	..	..	4	..
Montana	..	9	..	..	..	..	..	4	..
Nebraska	..	9	..	..	..	..	..	4	..
Nevada	..	9	..	..	..	..	..	4	..
New Hampshire	..	9	..	..	..	..	..	4	..
New Jersey	..	8	..	..	..	..	..	4	..
New Mexico	..	..	x	..	..	..	..	..	x
New York	..	8	..	..	..	..	..	4	..
North Carolina	..	..	..	..	x	..	..	4	..
North Dakota	..	9	..	..	..	..	..	4	..
Ohio	..	9	..	..	..	..	..	4	..
Oklahoma	..	..	..	..	x	..	..	..	x
Oregon	..	8	..	..	..	..	32	4	..
Pennsylvania	32	..	..	..	..	..	..	4	..
Rhode Island	..	..	..	..	x	..	..	4	..
South Carolina	..	9	..	..	..	..	36	..	..
South Dakota	..	..	..	..	x	..	..	..	x
Tennessee	36	..	..	..	..	..	..	..	x
Texas	..	8	..	..	..	..	..	4	..
Utah	..	9	..	..	..	..	..	4	..
Vermont †	..	..	..	..	..	..	..	4	..
Virginia	..	8	..	..	..	..	..	4	..
Washington	..	..	..	x	..	..	..	4	x
West Virginia	..	..	..	..	x	..	..	4	x
Wisconsin	..	..	..	x	..	..	..	4	x
Wyoming	..	..	..	x	..	..	..	..	x
Alaska	..	..	..	x	..	..	..	..	x
Canal Zone	..	10	..	..	..	..	..	4	..
Guam	..	9	..	..	..	..	..	4	..
Hawaii	..	..	..	..	x	..	..	..	x
Puerto Rico	..	..	..	x	..	..	..	..	x

* Association of American Medical Colleges and Council on Medical Education and Hospitals of the American Medical Association.
† 900 hours.
x implies requirements are those of the accrediting agencies.

Schedule of Written Examination Dates and Reciprocity Meetings

The schedule of state licensing boards for written examinations for medical licensure and meetings or oral examinations for the issuance of licenses by reciprocity and/or endorsement of credentials is given in table 25. To meet the demands for licensure in recent years as a result of the increase in the number of candidates seeking licensure, examination dates and reciprocity meetings have been scheduled at more frequent intervals. In those states requiring a basic science certificate for licensure, these dates are arranged to coincide closely with the examination and meeting dates of the boards of examiners in the basic sciences. In some states temporary permits are granted enabling physicians to begin the practice of medicine immediately.

TABLE 22.—*Medical Schools Requiring an Internship*

United States

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
Duke University School of Medicine*

Canada

University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
Laval University Faculty of Medicine
University of Montreal Faculty of Medicine

* Degree not withheld until internship completed.

Temporary Permits and Limited Licenses

The licensing boards of 27 states, Alaska, and Puerto Rico provide for the issuance of temporary permits or limited licenses or both. These states, the length of validity of the permit, and the number of permits granted during the last calendar year are shown in table 26. Three states and Alaska were added to this group in 1953: Iowa and New York, which issue temporary certificates for residency training, Wisconsin, which will grant a temporary educational permit to graduates of unapproved foreign medical schools, and Alaska, which gives short-term licenses for the cannery season. There were 1,252 permits issued by 19 boards and 1,012 limited licenses by 7 boards. Four boards did not report any certificates issued.

TABLE 23.—*Medical Licensing Boards Requiring a One Year Internship**

Alabama	Nevada	Vermont
Arizona	New Hampshire	Washington†
California	New Jersey†‡	West Virginia
Colorado	North Dakota†	Wisconsin
Delaware†	Oklahoma†	Wyoming†
District of Columbia	Oregon	Alaska§
Idaho	Pennsylvania†	Canal Zone
Illinois†	Rhode Island†	Guam
Iowa†	South Carolina	Hawaii
Kansas	South Dakota	Puerto Rico†
Michigan†	Utah	

* Some states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.
† Internship must be a rotating service.
‡ Two year residency in a specialty or one year of postgraduate work accepted.
§ Active practice for four years accepted in lieu of internship.

Medical License Fees

The fee charged by the medical licensing boards for registration by examination and also by reciprocity or endorsement of credentials is given in table 27. The examination fee is somewhat uniform throughout the country, the majority of the boards charging a fee of $25. The fee for a license by reciprocity or endorsement of credentials varies from $20 to $200. Four states, Connecticut, Kentucky, Minnesota, and New Jersey, reported an increase in the fee charged for the written examination, and four states, Connecticut, Minnesota, Texas, and Virginia, an increase in the fee charged for a license without written examination. Three states have a lower fee for those being

certified on the basis of the certificate of the National Board of Medical Examiners than candidates licensed by endorsement of state licenses: Connecticut, Massachusetts, and Nebraska.

Licensure on Government Credentials

In most of the states no provision is made in the medical practice act for the acceptance of government credentials as a basis for licensure without examination. Nine state licensing boards have indicated that in their discretion they may accept such credentials under varying regulations, but mainly the recognition is accorded to officers who obtained their commissions after examination. These states are Alabama, California, Illinois, Oregon, Pennsylvania, Texas, Utah, Washington, and Wisconsin.

Annual Registration

Thirty-three states, the District of Columbia, Alaska, and Hawaii require physicians to register their licenses annually or biennially. In table 28 are listed the licensing boards that exact this requirement and the fee charged for such registration. Some of these states require such registration whether or not physicians reside in the state. The fee charged ranged from $1 to $10. Five states have a nonresident fee. Georgia does not charge a fee. In Florida physicians are required to register with the State Board of Health, while Missouri, New York, and West Virginia require biennial registration.

Licensure of Foreign-Trained Physicians

Since February, 1950, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges have published a list of foreign medical schools whose graduates they recommend for consideration on the same basis as graduates of approved medical schools in the United States. This is offered as an advisory list for the use of any agency or organization that may find it helpful. The current list, revised to February, 1953, is contained in table 29. The position of the Council with respect to schools not named in the list is that they neither approve nor disapprove such schools. The credentials of graduates not listed must be evaluated by those other agencies, licensing boards, organizations, or institutions to whom graduates of the schools apply for recognition. Fifty schools in 14 countries are included in the present listing.

TABLE 24.—*States Exacting Licensure, Registration, or Other Requirements of Interns and Residents in Hospitals*

Requirements for Interns

Licensure Required

Georgia	New Jersey ‡	Wyoming
Minnesota *	New Mexico	Puerto Rico
Nevada †		

Required to Register with Licensing Board

Colorado §	Florida ‡	Texas
Delaware ‖	Indiana **	Virginia ††
Dist. of Columbia ¶	Massachusetts	West Virginia ‡‡

* Not required if internship is being served for M.D. degree of University of Minnesota.
† Temporary certificate for 1 year.
‡ May serve for 2 years without licensure.
§ Registration with licensing board required annually not to exceed 4 years.
‖ Must register with Medical Council of Delaware.
¶ Hospital must notify licensing board.
‡ Must register with State Board of Health and may serve for 3 years without licensure.
** Must be eligible for licensure.
†† Graduates of unapproved medical schools may serve 3 years if permission is secured from licensing board.
‡‡ Graduates of foreign medical schools required to obtain permission from licensing board.

Requirements for Residents in Hospitals

Licensure Required

Arkansas	Maryland *	South Carolina
California	Michigan	South Dakota
Connecticut *	Minnesota	Texas
Georgia	Mississippi	Washington
Idaho	New Mexico	Wisconsin
Indiana	Ohio †	Wyoming
Iowa	Pennsylvania	Puerto Rico
Louisiana		

Other Requirements

Colorado ‡	Maine **	North Carolina §§
Delaware §	Massachusetts ‡	Oklahoma ‖‖
Dist. of Columbia ‖	Nevada **	Virginia ¶¶
Florida ¶	New Jersey ††	West Virginia ‡‡
Illinois ‡	New York ‡‡	

* May be required by hospitals.
† If they assume full responsibility and receive pay for services.
‡ Registration with licensing board required.
§ Registration with Medical Council of Delaware required.
‖ Hospitals must notify licensing board.
¶ Must register with State Board of Health and may serve for 3 years without licensure.
‡ Temporary certificate issued for postgraduate or resident training for noncitizens or persons who do not expect to practice in Illinois.
** Temporary certificate for 1 year.
†† May serve for 2 years without licensure.
‡‡ Temporary certificate for 2 years except in municipal and state hospitals.
§§ Limited license granted.
‖‖ Temporary permit granted for 1 year; may be renewed for 2 additional years.
¶¶ Graduates of unapproved medical schools may serve 3 years if permission is secured from licensing board.
‡‡ Foreign graduates required to obtain permission from licensing board.

TABLE 25.—*Schedule of Written Examination Dates and Issuance of Licenses by Reciprocity or Endorsement of Credentials*

	Written Examinations Held	Licenses by Reciprocity or Endorsement Issued
Alabama	Annually	Continuously
Arizona	Quarterly	Quarterly
Arkansas	June and November	Continuously
California	Quarterly	Continuously
Colorado	Semiannually	Quarterly
Connecticut	March, July, and Nov.	Continuously
Delaware	January and July	January and July
District of Columbia	Semiannually	Quarterly
Florida	Semiannually	No reciprocity
Georgia	June and October	June and October
Idaho	Semiannually	Semiannually
Illinois	Quarterly	Quarterly
Indiana	Annually, June	Every 6 weeks to 2 months
Iowa	June and December	Every 2 months
Kansas	Semiannually	Semiannually
Kentucky	Semiannually	Continuously
Louisiana	June and December	June and December
Maine	Three, annually	Three, annually
Maryland	June and December	Monthly
Massachusetts	January and July	Monthly except August
Michigan	June and October	Continuously
Minnesota	Quarterly	Quarterly
Mississippi	June	June and December
Missouri	Three, annually	Periodically
Montana	Semiannually	Semiannually
Nebraska	Annually	Continuously
Nevada	Four, annually	Four, annually
New Hampshire	Twice annually	Twice annually
New Jersey	June and October	Monthly
New Mexico	Twice annually	Twice annually
New York	Jan., June, and Oct.	Continuously
North Carolina	Annually	Five times annually
North Dakota	Semiannually	Semiannually
Ohio	June and December	Quarterly
Oklahoma	Annually	Quarterly
Oregon	January and July	Quarterly
Pennsylvania	January and July	Monthly
Rhode Island	Quarterly	Four regular and special meetings
South Carolina	Twice annually	Every 3 months
South Dakota	Twice annually	Continuously
Tennessee	Quarterly	Continuously
Texas	Twice annually	Four meetings annually
Utah	Annually in July	Quarterly
Vermont	Twice annually	Continuously
Virginia	Semiannually	Semiannually
Washington	Twice annually	Twice annually
West Virginia	Twice annually	Quarterly
Wisconsin	January and July	Twice annually and special meetings
Wyoming	Three, annually	Three, annually
Alaska	January and Sept.	Twice annually
Canal Zone	As applied for	As applied for
Guam	On application	On application
Hawaii	January and July	Continuously
Puerto Rico	Twice annually	Continuously

Sixteen licensing boards stipulate that recognition is limited to graduates of the schools on this list. Other boards find the list useful in the evaluation of credentials. Foreign-trained physicians are not eligible for licensure by 11 boards. The present requirements for candidates seeking medical licensure in the United States and its territories and outlying possessions on the basis of credentials obtained in countries other than the United States and Canada are given in table 30. Vermont, which heretofore did not license foreign-trained physicians, has indicated it will consider such trainees. Oregon and Canal Zone, on the other hand, have stated they will no longer be admitted to licensure. Seven boards do not require citizenship, while 23 boards require full citizenship. Four-

TABLE 26.—*Temporary Permits, 1953*

State	Terms of Validity	Permits Granted	Limited Licenses Issued
Arizona	Emergency—next board meeting	33	..
Delaware	Four months, emergency—one year	2	2
Florida	Emergency—six months	7	..
Georgia	Next board meeting	0	..
Idaho	Next board meeting	26	..
Illinois	Temporary—postgraduate or nonresident training for noncitizens who do not expect to practice in state; limited for practice in state hospital	33	37
Indiana	Six months, reciprocity applicants	203	..
Iowa	Temporary—3 year hospital residency	0	..
Kansas	Next board meeting	47	..
Kentucky	Temporary—next board meeting; limited—one year—renewable—for institutional and public health work.	69	9
Louisiana	Next board meeting	85	..
Maine	Temporary—one year residency; limited—camp physician—one season	6	26
Massachusetts	Limited registration for interns and residents—renewed annually	..	800
Michigan	Residency training. Renewable for 5 years	496	..
Mississippi	Next board meeting	63	..
Nevada	One year for hospital practice	17	..
New Hampshire	Locum tenens, emergencies, etc. Time varies	..	..
New Jersey	Not less than 2 weeks or more than 4 months	7	..
New Mexico	Practice in state hospital until next board meeting; camp physician, not to exceed 6 months, and emergency	..	..
New York	Temporary — residency training — 2 years	150	..
North Carolina	Residents and for practice in prescribed area in neighboring state	..	71
Oklahoma	Residents—3 years	6	..
South Dakota	Emergency—4 years	..	7
Texas	Next board meeting	57	..
Virginia	Next board meeting	60	..
West Virginia	Next board meeting	..	..
Wisconsin	Temporary educational permit to graduates of unapproved foreign medical schools	..	..
Alaska	Short-term licenses for cannery season	17	..
Puerto Rico	Until June, 1955—Act 383 of 1946	18	..
Totals		1,252	1,012

teen boards require that the applicant file first citizenship papers only. Twenty-seven states indicate the foreign-trained physician must serve an internship or obtain further medical training in the United States. In addition to the items tabulated in this table, 18 boards have other specific requirements for foreign-trained physicians and 17 boards reported varying exemptions. Columns 7 and 8 of table 30 refer to the boards that have additional requirements and exemptions. The factual data pertaining to these regulations are included in the text immediately below the table.

This table was developed by the Council on Medical Education and Hospitals of the American Medical Association in an effort to assist the foreign-trained physician seeking licensure in the United States. While an attempt has been made to present the situation as it exists, the table is intended to give only a summary of existing requirements. Persons interested in licensure should supplement these data by communicating with the licensing

TABLE 27.—*Medical Licensure Fees*

	Examination	Reciprocity or Endorsement
Alabama	$ 10	$ 50
Arizona	25	100
Arkansas	25	50
California	25	100
Colorado	25	50
Connecticut	25	75 *
Delaware	25	100
District of Columbia	25	50
Florida	50	...
Georgia	20	50
Idaho	25	100
Illinois	15	25
Indiana	25	50
Iowa	25	50
Kansas	25	50
Kentucky	50	75
Louisiana	25	50
Maine	25	50
Maryland	20	50
Massachusetts	25	50 †
Michigan	50	100
Minnesota	25	100
Mississippi	10	50
Missouri	25	100
Montana	50	75
Nebraska	25	50 †
Nevada	100	200
New Hampshire	30	50
New Jersey	50	100
New Mexico	50	50
New York	30	30
North Carolina	50	100
North Dakota	25	50
Ohio	25	50
Oklahoma	25	100
Oregon	25	100
Pennsylvania	25	50
Rhode Island	20	20
South Carolina	25	50
South Dakota	20	50
Tennessee	35	50
Texas	40	100
Utah	25	50
Vermont	20	50
Virginia	25	100
Washington	35	35
West Virginia	25	100
Wisconsin	45	75
Wyoming	25	50
Alaska	25	100
Canal Zone	10	...
Guam	50	50
Hawaii	25	25
Puerto Rico	30	30

* Endorsement of National Board of Medical Examiners Certificate, $35.
† Endorsement of certificate of National Board of Medical Examiners, $25.

boards. Medical licensure in the United States is a "state right" and is entirely under the jurisdiction of the governments of the individual states. The power to license physicians is exercised through the medical licensing

TABLE 28.—*States Requiring Annual Registration*

State	Fee	State	Fee	State	Fee
Arizona	$ 5	Louisiana	$ 5	South Dakota	$ 2
Arkansas	a	Minnesota	2	Tennessee	5
California	2	Missouri*	5	Texas	5
Colorado	b	Montana	5	Utah	3
Connecticut	2	Nebraska	2	Vermont	2
Dist. of Columbia	2	Nevada	5	Virginia	1
Florida	1†	New Mexico	d	Washington	5
Georgia	None	New York*	5	West Virginia*	2
Idaho	10	North Dakota	e	Wisconsin	3
Indiana	c	Oklahoma	3	Wyoming	2.50
Iowa	3	Oregon	15	Alaska	10
Kansas	3	Pennsylvania	1	Hawaii	2

* Biennial registration.
† Required by State Board of Health.
a. Residents $2, nonresidents $4.
b. Residents $2, nonresidents $10.
c. Residents $5, nonresidents $10.
d. Residents $2, nonresidents $5.
e. Residents $5, nonresidents $2.

boards of each state. Official information concerning the acceptability of foreign credentials should be obtained directly from the licensing boards.

This table is included in a compendium of information concerning foreign medical schools and the status of foreign medical credentials in the United States that has been prepared by the Council on Medical Education and Hospitals as an aid to foreign-trained physicians. In addition to data pertaining to medical licensure, this booklet contains sections pertaining to graduate training in the medical specialties, internship and residency training, postgraduate courses, undergraduate medical study in the United States, and transfer to advanced standing in American medical schools and gives information pertaining to medical study in foreign medical schools. This compendium can be obtained without charge from the office of the Council.

Table 31 records the number of graduates of foreign medical faculties examined for medical licensure in 1953. The figures include both American and foreign-born physicians. Graduates of 175 medical schools and 7 licensing corporations were examined. Graduates of medical schools in the Phillipines, Iceland, 12 South and Central American countries, 28 countries in Europe, and 8 in Asia were represented at examinations. The number examined totaled 1,463. These physicians were tested in 34

(Continued on page 480.)

TABLE 29.—*Foreign Medical Schools*

List Prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States. This list is not final and will be supplemented as information is compiled for other schools.

Belgium

Free University of Brussels Faculty of Medicine
(Université Libre de Bruxelles Faculté de Médecine)
Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Médecine or
Katholieke Universiteit te Leuven)
University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or
Université de Gand Faculté de Médecine)
(Université de Liège Faculté de Médecine)
University of Liège Faculty of Medicine

Brazil

University of São Paulo Faculty of Medicine
(Universidade de São Paulo Faculdade de Medicina)

China

Peiping Union Medical College

This recommendation applies to all those graduates who were granted the degree of Doctor of Medicine from the date when the first degrees were conferred in 1924 until and including the class of 1943. The education of students in the last class, that of 1943, was interrupted by World War II; therefore, some students finally completed their studies as late as 1949. However, their diplomas were issued as of the class of 1943. Following the Communist conquest of China the name of this school was changed to the China Union Medical College. The recommendation does not apply to the school.

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)
Medical Faculty Turku University
(Turum Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)
State University of Groningen Faculty of Medicine
(Rijks-Universiteit te Groningen Geneeskunde Faculteit)
State University of Leiden Faculty of Medicine
(Rijks-Universiteit te Leiden Faculteit der Geneeskunde)
State University of Utrecht Faculty of Medicine
(Rijks-Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)
Charles Medico-Surgical Institute, Stockholm
(Karolinska Mediko-Kirurgiska Institutet)
Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)
University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)
University of Geneva Faculty of Medicine
(Université de Genève Faculté de Médecine)
University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Médecine)
University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgendoissisches Department Des Innern, Département Féderal de L'Intérieur) and obtainable only by Swiss citizens who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Études Médicales), or who hold one of the following certificates which the Swiss Universities issue to those, not citizens of Switzerland, who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma:

University of Basel—Academic Certificate on passing the medical examination for physicians (Akademische Zeugnis uber die bestandene Fachprufung für Ärzte).

University of Bern—Medical diploma on passing examination for medicine (Aerztliches Fakultats diplom uber die bestandene Fachprufung für Ärzte).

University of Geneva and University of Lausanne—Certificate of Medical Studies (Certificat d'Études Médicales).

University of Zurich—Medical diploma for Foreigners (Medizinisches Diplom für Ausländer).

United Kingdom

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle-upon-Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London †
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee

Wales

Welsh National School of Medicine, University of Wales, Cardiff

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who did not complete the work for the degree and who obtained their qualifications only through the examinations of the licensing corporations of the United Kingdom.

† Work for the medical degree of the University of London is offered at the following hospital medical schools:

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical College
St. George's Hospital Medical College
St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

TABLE 30.—STATUS OF REQUIREMENTS FOR MEDICAL LICENSURE FOR FOREIGN-TRAINED PHYSICIANS

	Written Examination Required	Admitted Also on Reciprocal Basis	Citizenship	Basic Science Certificate	Internship in United States	Recognition Limited to Graduates of Schools Accepted by A.M.A. and A.A.M.C.	Additional Requirements	Exemptions	Examination Fee, Dollars
Alabama	x	..	x	..	x	..	x	..	10
Arizona	x	..	1st P	x	x	x	..	x	25
Arkansas	Not accepted								
California	x	..	x	..	x	..	x	x	25
Colorado	x	..	x	x	x	x	x	x	25
Connecticut	x	x	1st P	x	..	..	..	..	25
Delaware	x	..	x	..	x	..	x	..	25
Dist. of Columbia	x	x	..	x	x	x	..	x	25
Florida	x	..	x	x	..	..	x	..	50
Georgia	x	x	x	..	..	x	..	..	20
Idaho	Not accepted								
Illinois	x	..	1st P	..	x	..	x	..	15
Indiana	x	..	..	..	..	..	x	..	25
Iowa	x	..	1st P	x	x	x	x	..	25
Kansas	x	x	x	..	x	..	..	x	35
Kentucky	x	..	x	..	x	..	x	..	25
Louisiana	Not accepted								
Maine	x	x	..	..	..	..	..	..	25
Maryland	x	..	1st P	..	x	..	..	x	20
Massachusetts	x	..	1st P	..	..	..	..	x	25
Michigan	x	..	x	x	x	..	x	..	50
Minnesota	x	..	x	x	..	..	x	..	25
Mississippi	x	..	x	..	..	x	..	..	10
Missouri	x	..	x	..	x	..	..	..	25
Montana	Not accepted								
Nebraska	x	..	x	x	..	..	..	..	25
Nevada	Not accepted								
New Hampshire	x	x	x	..	x	..	..	x	30
New Jersey	x	x	x	..	x	..	x	x	50
New Mexico	x	..	1st P	x	..	x	..	..	50
New York	x	..	1st P	..	..	..	..	..	30
North Carolina	x	..	..	..	..	x	..	x	50
North Dakota	x	..	x	..	x	..	..	x	25
Ohio	x	..	1st P	..	..	..	..	x	25
Oklahoma	x	..	x	x	x	x	..	..	25
Oregon	Not accepted								
Pennsylvania	x	..	1st P	..	x	x	..	x	25
Rhode Island	x	..	1st P	x	x	..	x	x	20
South Carolina	Not accepted								
South Dakota	x	..	1st P	x	x	..	x	..	20
Tennessee	x	..	x	x	..	x	..	..	35
Texas	Not accepted								
Utah	Not accepted								
Vermont	x	..	..	..	x	..	x	..	20
Virginia	x	..	1st P	..	x	..	x	x	25
Washington	x	..	..	x	x	x	..	..	35
West Virginia	x	..	x	..	x	..	x	..	25
Wisconsin	x	x	1st P	x	x	x	x	..	75
Wyoming	Not accepted								
Alaska	x	x	x	x	..	x	..	..	25
Canal Zone	Not accepted								
Guam	x	x	..	..	x	x	..	..	50
Hawaii	x	..	x	..	x	x	..	x	25
Puerto Rico	Not accepted								

This summary should be supplemented by direct communication with the secretary of the licensing board of the state in which the physician is interested.

x Implies yes.

Additional Requirements

Alabama. Candidate is eligible if his credentials have been appraised by the National Board of Medical Examiners and approved.

California. Applicant must present documentary evidence, satisfactory to the board (a) of completion in a medical school or schools of a resident course of professional instruction equivalent to that given in an American school, (b) that he is in possession of a medical diploma, (c) that he has been admitted or licensed to practice medicine in the country wherein is located the institution in which he completed his training, and (d) that, if he is not a citizen of the United States, the country in which he has been licensed will admit to practice citizens of the United States. Applicants must pass a written, clinical, and oral examination.

Colorado. Completion of senior year in approved medical school in the United States. Credentials must be submitted in original form and accompanied by translation and will be directly verified or documents should bear evidence of being visaed by the U. S. Consul in the country wherein the school of graduation is or was located.

Delaware. Residence for one year required. Completion of senior year in approved medical school in the United States.

Florida. For graduates of unapproved foreign schools, three year internship and/or residency training in approved hospital is required. Two years may be an internship, but one year must be a residency. Eighteen months or more service in the Medical Corps of the armed forces of the United States accepted as one year internship.

Illinois. Approved rotating internship in Illinois required. Limited license issued for practice in hospitals maintained by the state.

Indiana. Repetition of senior year in approved medical school or two years' postgraduate work in approved hospital in the United States.

Iowa. Internship or one year in medical school in the United States.

Kentucky. Applicant required to complete at least five years' training in the United States in an institution approved by the board and to have successfully passed examination of National Board of Medical Examiners.

Michigan. Completion of senior year in approved medical school in the United States or Canada, or M.S. degree in basic science from a graduate school affiliated with an approved medical school, or, in lieu of above, certificate of an oral comprehensive examination in the basic sciences by a joint screening board of examiners, from the faculties of the medical schools of the University of Michigan and Wayne University.

Minnesota. Considered on an individual basis. Credentials must be submitted in original form and accompanied by translation and will be verified, or documents should bear evidence of being visaed by the United States Consul in the country wherein the school is located.

New Jersey. Original certificate covering medical courses, original diploma and license in foreign country with translation by the Lawyers' and Merchants' Translation Bureau, 11 Broadway, New York City.

Rhode Island. Must pursue postgraduate study or serve additional one year internship or residency. Applicant must be licensed to practice medicine and surgery in country in which school of graduation is located.

South Dakota. Applicant required to practice in an emergency area for four years under a temporary license and reappear before the board for permanent licensure if a graduate of an unapproved school.

Vermont. Must be diplomate of National Board of Medical Examiners.

Virginia. Applicant must be licensed to practice medicine and surgery in country in which school of graduation is located, or must have completed the course of study and passed examinations equivalent to those required for a diploma or license conferring such full right to practice.

West Virginia. Applicant must be resident of the state for three years preceding application and be recommended by local medical society.

Wisconsin. 1953 Legislature established One Year Temporary Educational Permit, which authorizes graduates of unapproved foreign schools to obtain residency training in approved hospitals. May be renewed for two two additional years.

Exemptions

California. Does not apply to graduates of Canadian medical schools.

District of Columbia. Acceptable for reciprocal registration if similar privileges are accorded licentiates of District of Columbia by licensing agency or jurisdiction from which the applicant comes.

Illinois. Graduates of European medical colleges or universities after Jan. 1, 1943, with the exception of certain approved colleges in the British Isles, Denmark, Holland, Norway, Sweden, and Switzerland, will not be accepted after July 1, 1954. However, graduates of such European medical colleges after Jan. 1, 1943, may be considered providing they present diplomas of graduation from approved medical colleges in the United States after attendance in such colleges for at least one year, and, in addition, have served rotating internship of one year in an approved hospital in Illinois.

Kansas. Applicant must be licensed to practice in country of graduation. Application must be filed one year in advance.

Maryland. Graduates of acceptable medical schools may be accepted after completion of one year of internship or residency in an approved hospital in the United States if their credentials have been approved and they have presented at least two letters, recommending them as to their professional ability and moral character, from the hospital authorities.

Graduates, not on the recommended list, who obtained the medical degree after Jan. 1, 1940, are not eligible.

Graduates of foreign medical schools, before Jan. 1, 1940, whose schools were known to have had acceptable standards at the time of graduation may be considered if credentials and professional experience in the United States are acceptable to the board.

Graduates of Latin American schools not on the acceptable list referred to in the first paragraph above are not eligible.

Ability to write and speak English clearly is a primary requisite.

Massachusetts. Graduates of foreign medical schools who matriculated in medical school prior to Jan. 1, 1941, are eligible to apply for admission to the examinations. Graduates after Jan. 1, 1941, must be graduates of a medical school approved by the Approving Authority for Colleges and Medical Schools of the Commonwealth of Massachusetts. The board has approved the School of Physic, Trinity College, Dublin, Ireland.

New Hampshire. Diplomates of National Board of Medical Examiners eligible on reciprocity basis. Temporary license valid until citizenship is completed may be given. Considered on an individual basis.

New Jersey. Internship completed in foreign countries after July 1, 1934, not acceptable. Acceptance limited to schools recognized by the board.

New York. Graduates of foreign medical schools after October, 1939, not acceptable. Such graduates may submit a petition to determine what additional requirements will be necessary. List of foreign medical schools approved as a result of inspection by the Board of Regents.

North Carolina. Considered on an iidividual basis.

North Dakota. License to practice medicine and surgery in country in which school is located, otherwise required to complete senior year in approved medical school in the United States. Graduates of Canadian, British, Scotch, and Irish medical schools subsequent to 1939 are eligible.

Ohio. Graduates of schools of Continental Europe after 1943 are eligible if on accepted list. If not licensed in a foreign country must have one year in hospital in the United States; if not on accepted list, two years of training. Cases are considered individually.

Pennsylvania. Medical education abroad since 1941 not acceptable.

Rhode Island. Matriculants in foreign medical faculties subsequent to Jan. 1, 1949, not acceptable.

Texas. European graduates after 1939 limited to English speaking schools.

Virginia. Graduates of medical schools on accepted list admitted on same basis as approved medical schools in United States. Graduates of other schools having the required length of study and diploma required for practice in the country of their graduation, two years of internship in approved hospital in United States or Canada within past five years prior to application, or one year of study in an approved medical school in lieu of one year of the internship may be considered for examination. If United States citizenship has not been acquired in seven years, license becomes invalid.

Hawaii. Diplomates of National Board eligible on reciprocity basis.

TABLE 31.—FOREIGN-TRAINED PHYSICIANS EXAMINED

Marginal Number	SCHOOL	1 Alabama P	1 Alabama F	2 Arizona P	2 Arizona F	3 California P	3 California F	4 Colorado P	4 Colorado F	5 Connecticut P	5 Connecticut F	6 Delaware P	6 Delaware F	7 Dist. of Columbia P	7 Dist. of Columbia F	8 Florida P	8 Florida F	9 Georgia P	9 Georgia F	10 Illinois P	10 Illinois F	11 Indiana P	11 Indiana F	12 Iowa P	12 Iowa F	13 Louisiana P	13 Louisiana F
	ARGENTINA																										
1	Universidad Nacional de Buenos Aires	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
	AUSTRALIA																										
2	University of Sydney Medical School	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	University of Queensland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	AUSTRIA																										
4	Karl-Franzens-Universitat, Graz	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	3	2	..	..	..	..	..	..
5	Leopold Franzens-Universitat, Innsbruck	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	6	9	..	..	..	..	..	..
6	Universitat Wien	..	..	..	..	5	2	..	..	1	2	..	..	..	..	..	..	..	..	5	3	..	..	..	..	..	..
	BELGIUM																										
7	Université Bruxelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	0	1	0	..	..	..	..	..	..
8	Universiteit Gent	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	Université de Liège	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	Université Catholique de Louvain Faculté de Médecine	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	BRAZIL																										
11	Universidade do Rio de Janeiro	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	Faculdade de Medicine e Cirurgia do Para	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	BULGARIA																										
13	University of Sofia	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
	CHINA																										
14	University of Hongkong	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	Peiping Union Medical College	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
16	Hsiang Ya Medical College, Changsha	..	..	..	..	1	0	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	Pennsylvania Medical School, Shanghai	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	Hackett Medical College for Women, Canton	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	National College of Medicine of Shanghai	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	West China Union University School of Medicine, Chengtu, Szechwan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	Southeastern Medical College, Shanghai	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1
22	College of Medicine, National Sun Yat-Sen University, Canton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	Aurora University French School of Medicine, Shanghai	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	National Central University College of Medicine, Nanking	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	Tung Nan Chi University, College of Medicine, Ahgnhai, Kiangsu	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	National Kiangsu Medical College, Chengkiang, Kiangsu	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	COLOMBIA																										
27	Universidad Nacional, Bogota	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	CUBA																										
28	Universidad de la Habana	1	0	..	..	2	2	..	..	0	1	..	..	..	..	3	1	2	0	19	18	..	..	2	0	..	..
	CZECHOSLOVAKIA																										
29	Deutsche Universität, Prag	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	1	1	..	..	..	..	1	0
30	Universita Karlova, Praha	..	..	..	..	2	0	..	..	0	1	..	..	..	..	..	..	..	..	8	7	..	..	..	..	0	1
31	Univerzita Komenskeho, Bratislava	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..
32	Masarykova Universita, Brno	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
	DENMARK																										
33	Kobenhavns Universitet	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	DOMINICAN REPUBLIC																										
34	Universidad de Santo Domingo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
	EGYPT																										
35	Egyptian University Faculty of Medicine, Cairo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..
36	Fouad First University, Cairo	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ENGLAND																										
37	University of Bristol	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
38	University of Cambridge	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
39	University of Durham Medical School, Kings College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40	University of Leeds	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
41	University of Liverpool	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
42	University of London	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
43	Kings College (London)	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
44	University of Manchester	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45	Licentiate Royal College of Physicians of London and Member Royal College of Surgeons of England	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	ESTONIA																										
46	Tartu Ulikooli	..	..	..	..	1	1	..	..	..	..	1	0	..	..	..	..	..	..	2	4	..	..	..	..	..	..
	FINLAND																										
47	Helsingfors Universitet	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	FRANCE																										
48	Université de Bordeaux	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
49	Université de Lyon	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
50	Université de Montpelier	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
51	Université de Nancy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
52	Université de Paris	..	..	..	..	2	0	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
53	Université de Toulouse	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
54	Université d'Aix-Marseille	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	GERMANY																										
55	Friedrich-Wilhelms-Universität, Berlin	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..
56	Rheinische Friedrich-Wilhelms-Universität, Bonn	..	..	..	..	0	1	..	..	..	..	..	..	..	..	1	0	..	..	5	5	..	..	..	..	..	..
57	Schlesische-Friedrich-Wilhelms-Universität, Breslau	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
58	Friedrich-Alexanders-Universität, Erlangen	..	..	..	..	4	2	..	..	..	..	..	..	..	..	..	..	..	..	13	12	..	..	2	0	..	..
59	Albert-Ludwigs-Universität, Freiburg	..	..	..	..	1	0	..	..	0	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
60	Hessische Ludwigs-Universität, Giessen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
	Marginal Number	1		2		3		4		5		6		7		8		9		10		11		12		13	

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Maine	Maryland	Massachusetts	Michigan	Minnesota	Missouri	New Hampshire	New Jersey	New York	North Carolina	North Dakota	Ohio	Oregon	Pennsylvania	Rhode Island	South Dakota	Texas	Virginia	Washington	West Virginia	Wisconsin	Hawaii and Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage Failed	Number of Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	2	1
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	2
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1	1	0	0.0	1	3
.. ..	0 1	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1 2	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13	6	7	53.8	6	4
.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	22	9	13	59.1	5	5
.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11 19	.. ..	.. ..	2 0	.. ..	.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	54	28	26	48.1	8	6
.. ..	1 0	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	4	1	20.0	5	7
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	8
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	1	9
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	10
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	1	11
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	12
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	1	2	66.7	3	13
.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	14
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	2	1	33.3	2	15
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	2	16
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	2	17
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	18
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	19
.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	20
.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	0	2	100.0	2	21
0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	22
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	5	4	1	20.0	2	23
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	3	1	25.0	1	24
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	25
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	26
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	27
.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	3 4	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	1 5	.. ..	.. ..	.. ..	.. ..	2 0	69	36	33	47.8	12	28
1 0	0 2	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	7 9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	24	10	14	58.3	7	29
0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6 9	.. ..	.. ..	1 0	.. ..	1 0	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	33	15	18	54.5	8	30
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4 2	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8	5	3	37.5	3	31
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	1	2	66.7	2	32
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	33
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 2	12	5	7	58.3	2	34
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	2	35
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	36
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	37
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	38
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	1	39
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	40
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	41
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	5	4	1	20.0	3	42
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	1	43
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	44
1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	5	5	0	0.0	5	45
.. ..	1 0	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	3 7	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	21	8	13	61.9	6	46
1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	2	47
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	0	3	100.0	1	48
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	2	3	60.0	3	49
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	50
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	1	2	66.7	1	51
1 0	1 1	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	5 3	.. ..	.. ..	1 1	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	20	14	6	30.0	9	52
.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	0 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	1	3	75.0	2	53
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	54
.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	4 14	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	24	8	16	66.7	5	55
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	14	7	7	50.0	4	56
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	4	2	2	50.0	3	57
.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	36	22	14	38.8	5	58
.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7	2	5	71.4	5	59
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	60
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	

Marginal Number	SCHOOL	1 Alabama P	1 Alabama F	2 Arizona P	2 Arizona F	3 California P	3 California F	4 Colorado P	4 Colorado F	5 Connecticut P	5 Connecticut F	6 Delaware P	6 Delaware F	7 Dist. of Columbia P	7 Dist. of Columbia F	8 Florida P	8 Florida F	9 Georgia P	9 Georgia F	10 Illinois P	10 Illinois F	11 Indiana P	11 Indiana F	12 Iowa P	12 Iowa F	13 Louisiana P	13 Louisiana F
	GERMANY—Continued																										
61	Georg-August-Universität, Göttingen	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..
62	Martin Luther Universität, Halle-Wittenberg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
63	Universität Heidelberg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	..	..	..	..	..	..
64	Thuringische Landesuniversität, Jena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
65	Christian-Albrechts-Universität, Kiel	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
66	Albertus-Universität, Königsberg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
67	Universität Leipzig	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
68	Philipps-Universität, Marburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	4	..	..	..	..	..	..
69	Ludwig-Maximilians-Universität, München	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	20	25	..	..	1	0	..	..
70	Universität Rostock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
71	Eberhard-Karls-Universität, Tübingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	4	..	..	..	..	..	..
72	Julius-Maximilians-Universität, Würzburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..
73	Hamburgische Universität, Hamburg	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	..	..	..	..	..
74	Universität Köln	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
75	Johann Wolfgang Goethe-Universität, Frankfurt-am-Main	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	4	2	..	..	..	..	..	..
76	Westfalische Wilhelms-Universität, Münster	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..
77	Medizinische Akademie Düsseldorf	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1	..	..	1	0	..	..
78	United Hungarian University Medical School, Halle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
79	Humboldt University Medical School, Berlin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	GREECE																										
80	National University of Athens	..	..	..	..	2	1	..	..	..	..	..	..	..	..	1	0	..	..	4	1	..	..	..	..	..	..
	HAITI																										
81	Ecole Nationale, Port-au-Prince	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
	HUNGARY																										
82	Magyar Kiralyi Pazmany Petrus Tudomanyegyetum, Budapest	..	..	..	..	1	2	..	..	4	6	..	..	..	..	..	..	..	..	7	5	..	..	..	..	..	..
83	Magyar Kiralyi Ferency Josef Tudomanyegyetum, Szeged	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..
84	Magyar Kiralyi Erzebet Tudomanyegyetum, Pecs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
85	Magyar Kiralyi Tisza-Istvan Tudomanyegyetum, Debrecen	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ICELAND																										
86	Haskoli Islands Laee Knadeildin, Reykjavik	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	INDIA																										
87	University of Punjab	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	IRAN																										
88	Madresseh Teb, Teheran	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	IRAQ																										
89	Royal Iraq Medical College, Bagdad	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	IRELAND																										
90	Queen's University, Belfast	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
91	National University of Ireland	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
92	University College, Dublin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
93	University of Dublin	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
94	Licentiate of the Royal Colleges of Physicians and Surgeons of Ireland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
95	Licentiate of the Royal College of Surgeons of Ireland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ITALY																										
96	Regia Università di Bologna	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	..	..	..	..	..
97	Regia Università di Milano	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
98	Regia Università di Catania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
99	Regia Università di Firenze	..	..	..	..	3	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
100	Regia Università di Genova	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
101	Regia Università di Messina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
102	Regia Università di Modena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
103	Regia Università di Napoli	..	..	..	..	2	0	..	..	0	1	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
104	Regia Università di Padova	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
105	Regia Università di Palermo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
106	Regia Università di Parma	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
107	Regia Università di Pavia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
108	Regia Università di Perugia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
109	Regia Università di Pisa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
110	Regia Università di Roma	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..
111	Regia Università di Sassari	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
112	Regia Università di Siena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
113	Regia Università di Torino	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..
114	Regia Università di Bari	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
	JAPAN																										
115	Chiba University of Medicine	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
116	Tokyo Women's Special Medical School	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	LATVIA																										
117	Latvijas Universitate, Riga	..	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	..	1	0	..	..
	LEBANON																										
118	American University of Beirut	..	..	..	..	..	..	..	..	4	0	..	..	1	0	..	..	..	..	1	0	..	..	..	..	..	..
119	Faculté Française de l'Université de St. Joseph, Beyrouth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	LITHUANIA																										
120	Vytauto Didzijo Universiteto, Kaunas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	31	..	..	..	..	..	..
	MEXICO																										
121	Universidad Nacional, Mexico City	..	..	1	0	2	7	..	..	..	..	..	..	..	..	0	1	..	..	2	2	..	..	..	..	..	..
122	Universidad de Guadalajara	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
123	Escuelo Medico Militar, Mexico City	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
124	Universidad Libre Mexicana, Mexico City	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
125	National Homeopathic Medical School, Mexico City	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
126	National Autonomous University of Mexico, Mexico City	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
127	Escuela de Nuevo Leon, Monterrey	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..
	Marginal Number	1		2		3		4		5		6		7		8		9		10		11		12		13	

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Maine	Maryland	Massachusetts	Michigan	Minnesota	Missouri	New Hampshire	New Jersey	New York	North Carolina	North Dakota	Ohio	Oregon	Pennsylvania	Rhode Island	South Dakota	Texas	Virginia	Washington	West Virginia	Wisconsin	Hawaii and Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage Failed	Number of Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1 0																						6	3	3	50.0	3	61
								4 1						2 0								1	0	1	100.0	1	62
	1 1							0 2														10	10	6	37.5	3	63
								1 0			1 0			1 0								4	1	3	75.0	2	64
																						6	4	2	33.3	5	65
								0 1									0 1					1	1	0	0.0	1	66
	0 2		1 0	3 0		0 1		8 10			1 0			3 0								12	8	4	33.3	1	68
								1 1														77	39	38	49.4	10	69
				3 0				3 1														2	1	1	50.0	1	70
								1 1														22	17	5	22.7	3	71
		0 1						1 2														6	2	4	66.7	2	72
											0 1											14	6	8	57.1	4	73
		0 1						0 3														3	1	2	66.7	3	74
				1 0																		14	6	8	57.1	4	75
				1 0				1 1														4	3	1	25.0	2	76
																						11	9	2	18.2	4	77
			1 0																			1	1	0	0.0	1	78
																						1	1	0	0.0	1	79
								4 3			1 0											17	12	5	29.4	5	80
		1 1																				3	2	1	33.3	2	81
	1 1		1 0	1 0			0 1	7 15			4 5			2 0			1 1					65	29	36	55.4	11	82
	1 0		1 0								3 1											8	6	2	25.0	5	83
								0 2		1 0	2 1											6	3	3	50.0	3	84
	0 2							0 2			2 2											9	3	6	66.7	4	85
		1 0																				1	1	0	0.0	1	86
																						1	1	0	0.0	1	87
													1 0									1	1	0	0.0	1	88
								0 1														3	2	1	33.3	2	89
									1 0													2	2	0	0.0	2	90
2 0 2 0								1 0														7	6	1	14.3	5	91
2 0																						2	2	0	0.0	1	92
0 1 1 0																						5	4	1	20.0	4	93
																	2 0					2	1	1	50.0	1	94
											1 0											1	1	0	0.0	1	95
				1 0			2 2	8 15			1 0			1 0								40	17	23	59.0	7	96
								1 3														6	2	4	66.7	3	97
														1 0								1	1	0	0.0	1	98
																						3	3	0	0.0	1	99
								0 2			0 1											4	1	3	75.0	3	100
								1 0														1	1	0	0.0	1	101
								0 2														2	0	2	100.0	1	102
							3 3	0 4						1 1								16	7	9	56.2	6	103
								1 0														2	2	0	0.0	2	104
								0 4														5	1	4	80.0	2	105
				1 0																		3	3	0	0.0	3	106
														1 0								3	2	1	33.3	2	107
								0 1														1	0	1	100.0	1	108
								1 1														4	2	2	50.0	2	109
0 1		0 1						3 5						3 0								18	8	10	55.6	6	110
								0 1			0 1											2	0	2	100.0	2	111
								2 2														4	2	2	50.0	1	112
	1 0							1 2														9	5	4	44.4	4	113
								4 4						1 1								12	5	7	58.3	4	114
																						1	0	1	100.0	1	115
																						2	1	1	50.0	1	116
1 1 1 1		1 0	4 0					6 16	1 0		14 6											67	36	31	46.3	10	117
	1 0	1 0						2 1	1 0				1 0			4 0	1 0	1 0				19	18	1	5.3	11	118
								0 1								1 0						2	1	1	50.0	2	119
		2 0	1 0	1 1				8 16			7 6											87	33	54	62.1	6	120
	1 1							1 1								6 0					1 1	27	14	13	48.1	8	121
																						1	0	1	100.0	1	122
																0 1						1	0	1	100.0	1	123
																						1	0	1	100.0	1	124
																	1 0					2	2	0	0.0	2	125
																					4 5	10	5	5	50.0	2	126
																1 0						4	3	1	25.0	3	127
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	

TABLE 31.—FOREIGN-TRAINED PHYSICIANS EXAMINED

Marginal Number	SCHOOL	Alabama P	Alabama F	Arizona P	Arizona F	California P	California F	Colorado P	Colorado F	Connecticut P	Connecticut F	Delaware P	Delaware F	Dist. of Columbia P	Dist. of Columbia F	Florida P	Florida F	Georgia P	Georgia F	Illinois P	Illinois F	Indiana P	Indiana F	Iowa P	Iowa F	Louisiana P	Louisiana F
	NETHERLANDS																										
128	Universiteit van Amsterdam	..	..	..	..	1	0	..	..	2	0	..	..	..	..	1	0	1	0	2	0	..	..	..	..	..	..
129	Rijks-Universiteit te Groningen	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
130	Rijks-Universiteit te Leiden	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
131	Rijks-Universiteit te Utrecht	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	NEW ZEALAND																										
132	University of New Zealand, Dunedin	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	NICARAGUA																										
133	Universidad de Nicaragua Facultades de Medicina en Leon y en Granada	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
134	Universidad do Oriente y Mediodia, Granada	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	NORWAY																										
135	Kongelige Frederiks Universitet, Oslo	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	PARAGUAY																										
136	National University of Paraguay Faculty of Medical Sciences, Asuncion	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	PHILIPPINES																										
137	University of Santo Tomas, Manila	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
138	University of the Philippines, Manila	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
139	Afable College of Medicine, Manila	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	POLAND																										
140	Uniwersytet Jagiellonski Wydzial Lekarski, Cracow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
141	Uniwersytet Jana Kazimierza Wydzial Lekarski, Lwow (Lemberg)	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	..	..	..	..	..
142	Uniwersytet Jozefa Pilsudskiego, Warsaw	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	..	..	..	..	..
143	Uniwersytet Poznanski Wydzial Lekarski, Poznan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
144	Uniwersytet Stefana Batorego Wydzial Lekarski, Wilno	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..
	PORTUGAL																										
145	Universidade de Lisboa	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
146	Universidade do Porto	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	RUMANIA																										
147	Universitatea din Bucuresti	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..
148	Universitatea din Iasi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
149	Universitatea Regele Ferdinand I-iu din Cluj	..	..	..	..	4	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SCOTLAND																										
150	University of Aberdeen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
151	University of St. Andrew's, St. Andrew and Dundee	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
152	University of Edinburgh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
153	University of Glasgow	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
154	Licentiate of the Royal Colleges of Physicians and Surgeons of Edinburgh and Licentiate of the Royal Faculty of Physicians and Surgeons of Glasgow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
155	Licentiate of the Royal College of Physicians of Edinburgh, Member of the Royal College of Physicians of Edinburgh, Licentiate of the Royal College of Surgeons of Edinburgh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
156	Member of the Royal College of Physicians of Edinburgh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..
157	Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
158	Polish School of Medicine, Edinburgh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SOUTH AFRICA																										
159	University of Witwatersrand, Johannesburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0
	SPAIN																										
160	Universidad de Barcelona	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
161	Universidad Central de Espana, Madrid	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
	SWEDEN																										
162	Karolinska Mediko-Kirurgiska Institutet, Stockholm	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	SWITZERLAND																										
163	Universität Basel	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..
164	Universität Bern	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
165	Université de Genève	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	4	2	..	..	..	..	..	..
166	Université de Lausanne	..	..	..	..	3	0	..	..	3	0	..	..	..	..	1	1	..	..	2	1	..	..	..	..	..	..
167	Universität Zurich	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	TURKEY																										
168	University of Istanbul	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
	UNION OF SOCIALIST SOVIET REPUBLICS																										
169	Voronezh Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
170	Kazan Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
171	Kharkov Medical Institute	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
172	Kiev Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
173	First Moscow Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
174	Odessa Medical Institute	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
175	Tomsk Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
176	Dnepropetrovsk Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..
177	Severo-Kavka Medical Institute, Rostov-on-the-Don	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
178	Second Moscow Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
179	University of Baku	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	VENEZUELA																										
180	Universidad Central de Venezuela, Caracas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	YUGOSLAVIA																										
181	Zagrebasko Universiteta, Zagreb	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..
182	Beogradskog Universiteta, Beograd	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	..	..	..	..	..	..
	Totals	1		1		148		1		39		1		3		15		6		411		1		10		1	
	Totals—Examined—Passed	1		1		95		1		21		1		2		11		6		208		0		10		1	
	Totals—Examined—Failed	0		0		53		0		18		0		1		4		0		203		1		0		0	
	Percentage Failed	0.0		0.0		35.8		0.0		46.2		0.0		33.3		26.7		0.0		49.0		100.0		0.0		0.0	
Marginal Number		1		2		3		4		5		6		7		8		9		10		11		12		13	

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Maine	Maryland	Massachusetts	Michigan	Minnesota	Missouri	New Hampshire	New Jersey	New York	North Carolina	North Dakota	Ohio	Oregon	Pennsylvania	Rhode Island	South Dakota	Texas	Virginia	Washington	West Virginia	Wisconsin	Hawaii and Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage Failed	Number of Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	13	13	0	0.0	10	128
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	129
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	4	1	20.0	3	130
2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	4	0	0.0	3	131
.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	2	132
.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	133
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	134
.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	6	6	0	0.0	6	135
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	1	136
.. ..	0 1	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	6	3	3	50.0	5	137
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	138
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	139
.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	2 7	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	10	3	7	70.0	2	140
.. ..	1 0	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	6 10	.. ..	.. ..	6 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	34	18	16	47.1	6	141
.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 7	.. ..	.. ..	3 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	22	9	13	59.1	4	142
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7	6	1	14.3	4	143
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 2	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	9	6	3	33.3	4	144
.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	5	1	16.7	3	145
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	146
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	2	1	33.3	2	147
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	1	148
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7	6	1	14.3	2	149
.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	150
1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	4	4	0	0.0	4	151
.. ..	1 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	5	0	0.0	5	152
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	9	6	3	33.3	4	153
0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	2	3	60.0	4	154
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	155
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	156
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	157
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	1	2	66.7	2	158
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	2	159
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	0	3	100.0	3	160
.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	4	1	3	75.0	4	161
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	3	0	0.0	3	162
.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	0 1	1 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	3	3	50.0	4	163
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	1	5	83.3	2	164
.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	8 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	19	16	3	15.8	6	165
.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	0 1	3 4	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	.. ..	23	14	9	39.1	10	166
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	6	0	0.0	6	167
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	2	1	33.3	2	168
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	2	169
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	1	170
.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	6	3	3	50.0	5	171
.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	3	2	40.0	3	172
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	0	4	100.0	2	173
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	0	3	100.0	2	174
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	175
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	176
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	177
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	2	1	33.3	2	178
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	179
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	180
0 1	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	0 2	.. ..	.. ..	3 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11	6	5	45.5	7	181
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	0 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11	2	9	81.8	3	182
20	45	24	15	23	4	3	14	450	11	1	105	1	7	30	2	24	16	2	4	1	23	1,463	....	....	....	..	
13	30	10	15	23	3	1	6	172	11	1	66	1	7	26	1	18	14	2	4	1	13	....	796	....	....	..	
7	15	14	0	0	1	2	8	278	0	0	39	0	0	4	1	6	2	0	0	0	10	....	....	667	....	..	
35.0	33.3	58.3	0.0	0.0	25.0	66.7	57.1	61.8	0.0	0.0	37.1	0.0	0.0	13.3	50.0	25.0	12.5	0.0	0.0	0.0	43.5	....	....	....	45.5	..	
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	

states and Hawaii and Puerto Rico. The number who were successful was 796; failures numbered 667, or 45.5%. This extremely high percentage of failures is a primary factor in the cautious attitude that has been maintained by licensing boards in admitting foreign graduates to the licensing examination.

Graduates of the University of Kaunas, Lithuania, represented the largest group from any one school. Eighty-seven graduates of this school were examined in six states, 62.1% of whom failed. From Central America the school that represented the largest group was the University of Havana. Sixty-nine graduates of this school were examined in 12 states, with 47.8% failures.

The greatest number examined by any one state was 450 in New York, of whom 172 passed and 278 (61.8%) failed. Illinois examined 411, of whom 49% failed. California examined 148, with 35.8% failures and Ohio examined 105, with 37.1% failures. Other states tested fewer than 50.

TABLE 32.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1950-1953*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
1943	1,031	518	49.8
1944	691	325	53.0
1945	475	209	56.0
1946	495	221	55.3
1947	601	283	52.9
1948	639	311	51.3
1949	737	319	56.7
1950	799	359	55.0
1951	1,006	524	47.9
1952	1,208	648	46.3
1953	1,463	796	46.3
Totals	20,372	10,504	48.4

Table 32 presents the number of graduates of faculties of medicine examined for medical licensure in the United States in 24 years (1930-1953). In 1936 the number of foreign-trained physicians seeking licensure in the United States began to increase, and by 1940 there were over three times as many as were tested in 1936. Beginning in 1944 the numbers examined began to decrease until 1951, when there was a noticeable increase. Again in 1952 there was an increase and also in 1953. In 1953 there were 255 more examined than in the preceding year. At no time in the 24 year period did fewer than 30.7% fail in a given year.

Represented in table 33 are figures regarding the foreign-trained physicians registered in 1953 who were not previously licensed in the United States and who therefore are additions to the medical profession. There were 685 in this group, of whom 662 were licensed by written examination and 23 by endorsement of credentials. Comparative figures for three previous years, together with the figure for 1953, are given in table 34. In this four year period 2,327 foreign-trained physicians were examined (table 32) and 2,012 represent additions to the physician population of the United States and its territories and possessions.

TABLE 33.—*Graduates of Foreign Medical Faculties Representing Additions to the Medical Profession, 1953*

	Examination	Reciprocity and Endorsement	Total
Alabama	1	0	1
Arizona	1	0	1
California	84	0	84
Connecticut	6	3	9
Delaware	1	0	1
District of Columbia	1	1	2
Georgia	3	0	3
Illinois	192	0	192
Iowa	3	0	3
Maine	13	0	13
Maryland	13	0	13
Massachusetts	7	1	8
Michigan	4	0	4
Minnesota	21	0	21
Missouri	3	0	3
New Hampshire	1	0	1
New Jersey	6	0	6
New York	164	14	178
Ohio	56	1	57
Oregon	1	0	1
Pennsylvania	6	0	6
Rhode Island	23	0	23
South Dakota	1	0	1
Utah	12	0	12
Virginia	18	0	18
Washington	2	1	3
West Virginia	3	0	3
Wisconsin	1	0	1
Guam	0	1	1
Hawaii	1	1	2
Puerto Rico	14	0	14
Totals	662	23	685

TABLE 34.—*Additions to the Medical Profession Representing Graduate of Foreign Medical Faculties, 1950-1953*

Year	Examination	Reciprocity and Endorsement	Totals
1950	267	41	308
1951	425	25	450
1952	545	24	569
1953	662	23	685
Totals	1,899	113	2,012

The Council on Medical Education and Hospitals, as well as the state licensing boards, and other interested agencies, are presently actively reevaluating the whole status of the foreign medical graduate seeking recognition in the United States.

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Kentucky .....Dr. Bruce Underwood, Secretary, 620 South Third Street, Louisville 2
Louisiana .....Dr. Edwin H. Lawson, Secretary, 930 Hibernia Bank Building, New Orleans
Maine .....Dr. Adam P. Leighton, Secretary, 192 State Street, Portland
Maryland .....Dr. E. H. Kloman, Secretary, 1215 Cathedral Street, Baltimore 1
Massachusetts .....Dr. Robert C. Cochrane, Secretary, State House, Room 37, Boston 33
Michigan .....Dr. J. Earl McIntyre, Secretary, 118 Stevens T. Mason Building, Lansing 8
Minnesota .....Dr. E. M. Jones, Secretary, 230 Lowry Medical Arts Building, St. Paul 2
Mississippi .....Dr. Felix J. Underwood, Executive Officer, Old Capitol, Jackson 113
Missouri .....Mr. John A. Hailey, Executive Secretary, State Capitol Building, Box 4, Jefferson City
Montana .....Dr. Sidney A. Cooney, Secretary, 7 West 6th Avenue, Helena
Nebraska .....Mr. Husted K. Watson, Director, State Capitol Building, Room 1009, Lincoln 9
Nevada .....Dr. George H. Ross, Secretary, 112 N. Curry Street, Carson City
New Hampshire .....Dr. John S. Wheeler, Secretary, 107 State House, Concord
New Jersey .....Dr. Earl S. Hallinger, Secretary, 28 W. State Street, Trenton
New Mexico .....Dr. R. C. Derbyshire, Secretary, 227 E. Palace Avenue, Santa Fe
New York .....Dr. Stiles D. Ezell, Secretary, 23 S. Pearl Street, Albany 7
North Carolina .....Dr. Joseph J. Combs, Secretary, 716 Professional Building, Raleigh
North Dakota .....Dr. C. J. Glaspel, Secretary, Grafton
Ohio .....Dr. H. M. Platter, Secretary, 21 W. Broad Street, Columbus 15
Oklahoma .....Dr. Clinton Gallaher, Secretary, 813 Braniff Building, Oklahoma City
Oregon .....Mr. Howard I. Bobbitt, Executive Secretary, 609 Failing Building, Portland 4
Pennsylvania .....Mrs. Margaret G. Steiner, Acting Secretary, Box 911, Harrisburg
Rhode Island .....Mr. Thomas B. Casey, Administrator, 366 State Office Building, Providence
South Carolina .....Mr. N. B. Heyward, Secretary, 1329 Blanding Street, Columbia
South Dakota .....Dr. C. B. McVay, Secretary, Yankton Clinic, Yankton
Tennessee .....Dr. H. W. Qualls, Secretary, 1635 Exchange Building, Memphis 3
Texas .....Dr. M. H. Crabb, Secretary, 1714 Medical Arts Building, Fort Worth 2
Utah .....Mr. Frank E. Lees, Assistant Director, 314 State Capitol Building, Salt Lake City
Vermont .....Dr. F. J. Lawliss, Secretary, Richford
Virginia .....Dr. K. D. Graves, Secretary, 631 First Street, S.W., Roanoke
Washington .....Mr. Edward C. Dohm, Secretary, Olympia
West Virginia .....Dr. Newman H. Dyer, Secretary, State Office Building No. 3, Charleston 5
Wisconsin .....Dr. Thomas W. Tormey, Jr., Secretary, State Office Building 1 W. Wilson Street, Madison
Wyoming .....Dr. Franklin D. Yoder, Secretary, State Office Building, Cheyenne
Alaska .....Dr. W. M. Whitehead, Secretary, 172 S. Franklin Street, Juneau
Canal Zone .....Dr. Don Longfellow, Health Director, Balboa Heights
Guam .....Dr. Benedict Cooper, Executive Secretary, Guam Memorial Hospital, Agana
Hawaii .....Dr. I. L. Tilden, Secretary, 1020 Kapiolani Street, Honolulu
Puerto Rico .....Mr. Joaquin Mercado Cruz, Secretary, Box 9156, Santurce
Virgin Islands .....Dr. Earle M. Rice, Secretary, St. Thomas

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Nineteen states, the District of Columbia, and Alaska have adopted by legislative action basic science requirements underlying the practice of the healing art. A basic science law provides for the establishment of a board of examiners and requires that each person who desires to practice the healing arts appear before the board and demonstrate his knowledge of the basic sciences. The basic science boards have no licensing powers. A certificate in the basic sciences is a prerequisite to licensure in these states.

The states comprising this group, together with the year of enactment of the basic science law, are recorded in table 35. No new basic science law was enacted in 1953.

TABLE 35.—*States Having Basic Science Laws and Year of Enactment*

Alaska	1946	Nevada	1951
Arizona	1937	New Mexico	1941
Arkansas	1929	Oklahoma	1937
Colorado	1937	Oregon	1934
Connecticut	1925	Rhode Island	1940
District of Columbia	1929	South Dakota	1939
Florida	1939	Tennessee	1943
Iowa	1934	Texas	1949
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925
Nebraska	1927		

TABLE 36.—*Subjects Included in Basic Science Examinations*

	Examination Required in							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Public Health
Alaska	x	x	x	..	x	x	x	..
Arizona	x	x	x	..	x	x	x	..
Arkansas	x	x	x	..	x	x	x	..
Colorado	x	x	x	..	..	x	x	..
Connecticut	x	..	..	x	x	x	x	..
District of Columbia	x	x	x	..	..	x	x	..
Florida	x	x	x	..	..	x	x	..
Iowa	x	x	x	..	x	x	x	..
Michigan	x	x	x	..	..	x	x	..
Minnesota	x	x	x	..	x	x	x	..
Nebraska	x	x	x	..	x	x	x	..
Nevada	x	x	x	..	..	x	x	..
New Mexico	x	x	x	..	..	x	x	..
Oklahoma	x	x	x	..	..	x	x	..
Oregon	x	..	x	..	x	x	x	..
Rhode Island	x	x	x	..	..	x	x	..
South Dakota	x	x	x	..	..	x	x	..
Tennessee	x	x	x	..	..	x	x	..
Texas	x	x	x	..	x	x	x	x
Washington	x	..	x	..	x	x	x	..
Wisconsin	x	..	..	x	..	x	x	..

TABLE 37.—*Reciprocity, Endorsement, Waiver, or Exemption Policies of Basic Science Boards*

	Credentials Accepted
Alaska	Physicians are accepted on reciprocity from the following state medical and/or basic science boards: Alabama, Arkansas, California, Colorado, Connecticut, District of Columbia, Indiana, Kansas, Kentucky, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin.
Arizona	Any basic science certificate that has been obtained by an examination before the issuing board to the extent that the examination has covered the same topics Arizona examines in and provided at least four subjects were passed at once. Practitioners licensed in a basic science state prior to the passage of basic science legislation are eligible on a previous licensure basis.
Arkansas	Certificate of basic science boards of all states except Florida, Iowa, and New Mexico. Reciprocity with state boards of medical examiners variable.
Colorado	(a) There is complete reciprocity with the following basic science boards: Arizona, Arkansas, Minnesota, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, and Texas. (b) Applicants who present basic science certificates from the Connecticut and Wisconsin boards are examined in chemistry and bacteriology. (c) Complete reciprocity with the Alaska and Iowa basic science boards is granted to those candidates whose original application was received on or before June 1, 1949. Those making application after this date must pass four of the five subjects given by the Colorado Board.
Connecticut	No reciprocity. Board may in its discretion waive examination.
District of Columbia	Board may exempt an applicant. All requests are considered individually.
Florida	None.
Iowa	Certificate by exemption granted if credentials presented are equal to those of Iowa Basic Science Board. Each case considered individually.
Michigan	Certificates must meet legal requirements. At present Rhode Island is the only basic science board meeting legal requirements. Awaiting decision by Michigan Legislature.
Minnesota	Reciprocity on an automatic basis with the basic science boards of Arkansas, Colorado, Nebraska, Oregon and Tennessee (after February 9, 1945) and Part I of the National Board of Medical Examiners. Reciprocity on an individual basis with basic science boards of Alaska, Arizona, Nevada, New Mexico, Oklahoma, South Dakota, and Texas. Reciprocity on an individual basis with the medical licensing boards of Alaska, Indiana, Kentucky, New York (subsequent to 1925), Oklahoma, Texas, Vermont, and Virginia. Partial credit granted for grades in certain subjects passed in examinations of medical licensing boards of Alabama, Georgia, Louisiana, New York (subsequent to 1925), North Carolina, and the District of Columbia, and the basic science board in Wisconsin.
Nebraska	In the case of states having a basic science law, waiver is based on the results of the basic science examination, or waiver may be made on the basis of grades obtained before a medical board, if basic science certificate is not held by applicant. A grade of at least 75% is necessary in each of the basic science subjects in which applicants are examined in Nebraska.
Nevada	Reciprocity with basic science boards of Arizona, Colorado, Iowa, Minnesota, New Mexico, Oklahoma, South Dakota, Tennessee, and Texas. Waiver with basic science boards of Florida, Michigan, Nebraska, and Oregon.
New Mexico	Reciprocity with basic science boards of Arizona, Colorado, Iowa, Michigan, Minnesota, Nevada, Oklahoma, Oregon, Tennessee, and Wisconsin.
Oklahoma	Applicants are accepted or rejected on the basis of individual qualifications.
Oregon	Certificate in the basic sciences obtained by examination in Arkansas, Colorado, Iowa, Minnesota, Nebraska, New Mexico, Oklahoma, South Dakota, Tennessee, Texas, and Wisconsin.
Rhode Island	Endorsement with Massachusetts Board of Registration in Medicine and basic science boards of Colorado, and Oklahoma.
South Dakota	Reciprocity with basic science boards of Arizona, Arkansas, Colorado, Iowa, Minnesota, Nebraska, Nevada, Oklahoma, Oregon, Tennessee, Texas, and Wisconsin.
Tennessee	Varies.
Texas	Certificate of basic science boards of Alaska, Arizona, Arkansas, Colorado, Iowa, Minnesota, Nebraska, Nevada, Oklahoma, Oregon, South Dakota, Tennessee, partial reciprocity with Wisconsin, and on the basis of examinations passed before any professional examining board or the National Board of Medical Examiners.
Washington	None.
Wisconsin	Full reciprocity with basic science boards of Arkansas, Iowa, Oregon, South Dakota, and Tennessee. Limited reciprocity with basic science boards of Arizona, Colorado, Minnesota, Nebraska, New Mexico, and Texas.

TABLE 38.—*Applicants Examined in Basic Sciences, 1953*

	Physicians, Dentists, and Medical Students		Osteopaths		Chiropractors and Naturopaths		Unclassified and Others		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Alaska	2	0	0	0	0	0	0	0	2	2	0	0.0
Arizona	78	..	7	..	4	..	21	26*	136	110	26	19.1
Arkansas	87	35	80	40	3	4	8	5	262	178	84	32.1
Colorado	204	..	2	..	0	..	37	..	243	243	**	0.0
Connecticut	144	6	1	0	10	23	0	0	184	155	29	15.8
District of Columbia	8	0	0	0	0	0	0	0	8	8	0	0.0
Florida	536	241	53	29	9	4	119	161	1,152	717	435	37.8
Iowa	180	..	81	..	16	..	86	..	363	363	**	0.0
Michigan	207	..	19	..	2	..	50	131*	409	278	131	32.1
Minnesota	206	..	6	..	0	..	45	102*	359	257	102	28.7
Nebraska	118	34	0	0	2	4	0	0	158	120	38	24.1
Nevada	17	5	1	0	0	0	0	4	27	18	9	33.3
New Mexico	42	0	2	0	5	0	7	0	56	56	0	0.0
Oklahoma	84	..	0	..	0	..	4	29*	117	88	29	24.8
Oregon	88	57	2	1	0	2	11	26	187	101	86	46.0
Rhode Island	95	31	3	2	3	3	0	0	137	101	36	26.3
South Dakota	42	10	27	12	0	0	8	5	104	77	27	26.0
Tennessee	210	59	0	0	0	0	6	3	278	216	62	22.3
Texas	120	17	1	1	0	2	0	3	144	121	23	16.0
Washington	224	20	3	5	3	30	0	0	285	230	55	19.3
Wisconsin	395	18	8	0	11	30	1	0	463	415	48	10.4
Totals, Examined	3,020		386		170		898		5,074			
Totals, Passed	3,087		296		68		403			3,854		
Totals, Failed	533		90		102		495				1,220	
Percentage, Failed	14.7		23.3		60.0		55.1					24.0

* Nature of practice undeterminable since names of failures not supplied.

** Failures not reported.

TABLE 39.—*Basic Science Certificates Issued by Examination, Reciprocity, and Endorsement, 1953*

	Examination					Reciprocity, Endorsement, Exemption, or Waiver					
	Physicians, Dentists, and Medical Students	Osteopaths	Chiropractors and Naturopaths	Unclassified and Others	Totals	Physicians, Dentists, and Medical Students	Osteopaths	Chiropractors and Naturopaths	Unclassified and Others	Totals	Registered
Alaska	2	0	0	0	2	12	0	0	2	14	16
Arizona	78	7	4	21	110	47	15	0	23	85	195
Arkansas	87	80	3	8	178	37	1	1	0	39	217
Colorado	204	2	0	37	243	65	26	4	11	106	349
Connecticut	144	1	10	0	155	0	0	0	0	0	155
Dist. of Columbia	8	0	0	0	8	165	0	0	0	165	173
Florida	536	53	9	119	717	0	0	0	0	0	717
Iowa	180	81	16	86	363	70	10	0	17	97	460
Michigan	207	19	2	50	278	87	3	0	7	97	375
Minnesota	206	6	0	45	257	164	2	2	0	168	425
Nebraska	118	0	2	0	120	34	0	0	0	34	154
Nevada	17	1	0	0	18	14	7	0	0	21	39
New Mexico	42	2	5	7	56	25	3	0	0	28	84
Oklahoma	84	0	0	4	88	1	0	0	0	1	89
Oregon	88	2	0	11	101	68	24	3	28	123	224
Rhode Island	95	3	3	0	101	9	0	0	0	9	110
South Dakota	42	27	0	8	77	10	1	2	9	22	99
Tennessee	210	0	0	6	216	88	2	0	9	99	315
Texas	120	1	0	0	121	519	68	3	9	599	720
Washington	224	3	3	0	230	0	0	0	0	0	230
Wisconsin	395	8	11	1	415	165	5	18	4	192	607
Totals	3,087	296	68	403	3,854	1,580	167	33	119	1,899	5,753

The subjects in which examinations are conducted are shown in table 36. The subjects are specified by statute. The boards in the basic sciences have no authority to add any subjects or to refrain from examining in any subjects, although in some states provision is made for certification without examination, by waiver or exemption. The credentials acceptable for certification without examination are listed in table 37.

The results of examinations given and the number of certificates issued on the basis of reciprocity, endorsement, waiver, or exemption during 1953 are presented in tables 38 and 39. A candidate in applying for a basic science certificate is not required by law to reveal his school of practice. The lists submitted by the respective boards, however, have been checked with the biographic records of physicians and medical students maintained by the American Medical Association and with various directories. In this way it has been possible to determine the profession of the majority of candidates. By this means, the data presented have been tabulated in four groups, namely, physicians and medical students, osteopaths, chiropractors, and unclassified applicants. The last category includes those for whom it was not possible to determine the profession represented. It is probable that many in this unclassified group include osteopaths, chiropractors, and also naturopaths who have not been identified by the reference data available.

TABLE 40.—*Total Candidates for Basic Science Certification, 1927-1953*

		Physicians, Dentists, and Medical Students						Other Practitioners					
	No. of Boards	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified
1927	5	305	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	5	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	601	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,032	891	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	158	70	88	55.7	26	96
1939	14	1,141	1,013	128	11.2	727	1,740	218	97	121	55.5	294	391
1940	16	1,308	1,140	168	12.5	824	1,464	280	153	127	43.9	22	175
1941	17	1,768	1,560	208	11.8	280	1,840	356	191	165	46.3	73	264
1942	17	1,725	1,476	249	14.4	213	1,689	497	249	248	49.9	91	340
1943	18	2,330	2,098	232	10.0	296	2,394	389	211	178	45.8	86	297
1944	18	2,284	1,868	416	18.2	222	2,090	465	276	189	40.6	87	363
1945	18	2,576	2,146	430	16.6	412	2,558	397	193	204	51.4	172	365
1946	19	2,937	2,391	546	18.7	1,308	3,699	313	167	146	46.6	166	333
1947	19	3,132	2,405	727	23.2	771	3,176	406	228	178	43.8	189	417
1948	19	3,000	2,601	399	13.3	1,069	3,670	827	437	390	47.1	349	786
1949	20	2,932	2,540	392	13.4	940	3,480	2,239	1,116	1,123	50.2	540	1,656
1950	20	2,989	2,627	362	12.1	2,176	4,803	1,781	803	978	54.8	350	1,153
1951	21	2,810	2,491	319	11.3	1,453	3,944	1,123	707	416	37.0	486	1,193
1952	21	3,263	2,870	393	12.3	1,471	3,341	1,889	936	953	50.4	453	1,389
1953	21	3,620	3,087	533	14.7	1,580	4,667	1,454	767	687	47.2	319	1,086
Totals		47,180	40,561	6,619	14.0	14,974	54,235	13,566	6,956	5,610	49.4	4,768	11,724

There were 5,074 candidates examined by the 21 boards in operation in 1953. The numbers examined in the four categories mentioned and the total examined by each board are shown in table 38. The majority (3,620) represented physicians or medical students, 386 were osteopaths, 170 were chiropractors or naturopaths, and 898 were placed in the unclassified group. Of all applicants, 24% failed. Of the physicians and medical students 14.7% failed, of osteopaths 23.3%, of chiropractors and naturopaths 60%, and of the unclassified 55.1% failed. Among those who were certified there were 3,087 physicians and medical students, 296 osteopaths, 68 chiropractors or naturopaths, and 403 unclassified candidates. The basic science boards of Florida, Iowa, Michigan, and Minnesota examined the greatest number of applicants. Florida examined 1,152, Iowa 363, Michigan 409, and Wisconsin 463. The percentage of failures in these states was Iowa 37.8, Michigan 32.1, and Minnesota 28.7. The Iowa board does not report its failures. Alaska, the District of Columbia, and New Mexico had no failures. Alaska and the District of Columbia examined physicians only, while in New Mexico 42 of the 56 examined were physicians.

TABLE 41.—*Basic Science Fees*

Alaska	$25	Nevada	$25
Arizona	20	New Mexico	50 [3]
Arkansas	20	Oklahoma	15 [4]
Colorado	25	Oregon	10
Connecticut	10	Rhode Island	10
District of Columbia	25	South Dakota	15 [1]
Florida	10	Tennessee	25
Iowa	10	Texas	15 [1]
Michigan	10	Washington	10
Minnesota	15 [1]	Wisconsin	10 [2]
Nebraska	10 [2]		

1. Reciprocity, $25.
2. Reciprocity, $15.
3. Reciprocity, $75.
4. Reciprocity, $50.

Arizona, Michigan, Minnesota, and Oklahoma do not report the names of applicants who fail examinations. The numbers who fail are, therefore, recorded only in the total column.

Physicians or medical students were examined by all boards, osteopaths by 16 boards and chiropractors and naturopaths by 11 boards. There were figures for 13 boards in the unclassified group.

Eighteen boards issued 1,899 certificates by reciprocity, endorsement, waiver, or exemption. The number of successful applicants by examination and by endorsement (5,753) is recorded in table 39. Included in the total certified were 4,667 physicians or medical students and 1,086 others representing osteopaths, chiropractors, naturopaths, and the unclassified group. The latter group included 463 osteopaths, 101 chiropractors, and 522 unclassified candidates.

In 27 years (table 40) 47,180 physicians, dentists, or medical students were examined, of whom 40,561 were successful in their examinations. In the same period 13,566 other practitioners were tested and 6,956 were successful. There were 14,974 physicians and medical students issued certificates without examination and 4,768 to other practitioners. In both categories during the 27 year period there were 55,335 certificates issued to physicians and medical students and 11,724 to other practitioners.

The fees for certification in the basic sciences in the states requiring such certification are given in table 41.

Examination and endorsement meetings are held in most instances semiannually, or to coincide with the examinations and meetings scheduled by the licensing boards.

The principle of basic science legislation is to provide a means of insuring that all who seek licensure to care for sick and injured persons shall first possess a reasonable knowledge of the sciences fundamental to the healing art. The enforcement of such laws affects mostly the group classified as "other practitioners." This is particularly significant since the testing is made by nonmedical examiners.

The present executive corresponding officer of each of the 21 basic science boards is as follows:

Arizona .....Mr. Herbert D. Rhodes, Secretary, University of Arizona, Tucson
Arkansas .....Mr. Louis E. Gebauer, 1002 Donaghey Building, Little Rock
Colorado .....Dr. Esther B. Starks, Secretary, 1459 Ogden Street, Denver 18
Connecticut ..Mr. M. G. Reynolds, Executive Assistant, 258 Bradley Street, New Haven 10
District of Columbia ... Dr. James P. Leake, Secretary, 2733 Ontario Road, N.W., Washington
Florida .....Mr. M. W. Emmel, Secretary, University of Florida, Box 340, Gainesville
Iowa .....Dr. Ben H. Peterson, Secretary, Coe College, Cedar Rapids
Michigan ....Mrs. Ann Baker, Secretary, 410 W. Michigan Avenue, Lansing 15
Minnesota ....Dr. Raymond N. Bieter, Secretary, 105 Millard Hall, University of Minnesota, Minneapolis 14
Nebraska ....Mr. Husted K. Watson, Director, State Capitol Building, Room 1009, Lincoln 9
Nevada .....Mr. Donald G. Cooney, Secretary, Box 9005, University Station, Reno
New Mexico ..Mrs. Marguerite Cantrell, Secretary, Box 1522, Santa Fe
Oklahoma ....Dr. Clinton Gallaher, Secretary, 813 Braniff Building, Oklahoma City
Oregon .....Dr. Charles D. Byrne, Secretary, University of Oregon, Eugene
Rhode Island..Mr. Thomas B. Casey, Administrator, 366 State Office Building, Providence
South Dakota.Dr. Gregg M. Evans, Secretary, 310 E. 15th Street, Yankton
Tennessee ....Dr. O. W. Hyman, Secretary, 874 Union Avenue, Memphis
Texas .....Brother Raphael Wilson, Secretary, 407 Perry-Brooks Building, Austin
Washington ..Mr. Edward C. Dohm, Secretary, Olympia
Wisconsin ....Mr. William H. Barber, Secretary, 621 Ransom Street, Ripon
Alaska .....Dr. C. Earl Albrecht, Secretary, Box 1931, Juneau

NATIONAL BOARD OF MEDICAL EXAMINERS

The medical licensing boards of 39 states, the District of Columbia, the territories of Alaska and Hawaii, Puerto Rico, and the Canal Zone recognize the certificate of the National Board of Medical Examiners as an adequate qualification for a medical license. The certificate is not recognized by the licensing boards of Arkansas, Florida, Georgia, Indiana, Louisiana, Nebraska, North Carolina, Pennsylvania, South Carolina, and Texas. Delaware requires that National Board diplomates have two years of medical practice to qualify for licensure, while the laws or regulations of the licensing boards in Illinois, Rhode Island, Wyoming, and Hawaii require diplomates to take an oral examination. A brief supplemental written examination is required in Michigan.

In addition to the boards of medical licensure, 19 states, the District of Columbia, and Alaska have established separate examining boards in the basic sciences. The basic science boards of Arizona, Colorado, Michigan, New Mexico, Oregon, Rhode Island, South Dakota, and Washington do not provide exemption for National Board diplomates, and in these states diplomates are required to take an examination in the basic sciences before obtaining a medical license.

TABLE 42.—*Licensing Boards Endorsing the Certificate of the National Board of Medical Examiners, 1954*

Alabama	Illinois [1]	Montana	Puerto Rico
Alaska	Iowa	Nevada	Rhode Island [1,3]
Arizona [3]	Kansas	New Hampshire	South Dakota [3]
California	Kentucky	New Jersey	Tennessee
Canal Zone	Maine	New Mexico [3]	Utah
Colorado [3]	Maryland	New York	Vermont
Connecticut	Massachusetts	North Dakota	Virginia
Delaware [4]	Michigan [2,3]	Ohio	Washington [3]
Dist. of Columbia	Minnesota	Oklahoma	West Virginia
Hawaii [1]	Mississippi	Oregon [3]	Wisconsin
Idaho	Missouri	Pennsylvania	Wyoming [1]

1. Oral examination required.
2. Brief supplemental written examination required.
3. Examination in basic sciences required.
4. Require two years of medical practice.

Some states exact additional requirements, i. e., a basic science certificate, proof of citizenship and an internship of one year. These are general requirements of all candidates for licensure.

The states, territories, and possessions that will endorse the certificate of the National Board of Medical Examiners are recorded in table 42.

The National Board admits to its examinations any student in good standing in medical schools in the United States and Canada that are approved by the Council on Medical Education and Hospitals of the American Medical Association. Any graduate of a school approved at the time of graduation is eligible upon presentation of a photostatic copy of the medical degree.

Students trained in foreign medical schools that are included on the list agreed upon jointly by the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges may be admitted to the board's examination upon presentation of certification of an M.D. degree or its equivalent. Graduates of foreign medical schools not included on the list, who have had postgraduate training and experience in approved hospitals in the United States or in Canada and who have graduated from a school known to have had acceptable standards at the time of graduation, are considered on an individual basis.

TABLE 43.—*National Board Examinations, 1916-1921*

Year	Total Examined	Passed	Failed	Percentage Failed
1916	10	5	5	50.0
1917	40	31	9	22.5
1918	59	51	8	13.8
1919	52	51	1	1.9
1920	108	82	26	24.0
1921	56	48	8	14.2
Totals	325*	268	57	17.5

* Represents eleven examinations.

The National Board was founded in 1915 by Dr. W. L. Rodman, then President of the American Medical Association. The written examinations as now given are the objective, multiple-choice form of test. The examinations are designed to measure comprehensive knowledge and ability to apply that knowledge intelligently. The test is administered by the Educational Service of Princeton,

N. J. A wide variety of types of questions are used to measure not only the candidate's knowledge but also his judgment, reasoning, and ability to apply facts to the problems at hand. A handbook describing the item types is available to all candidates in order that they may be altogether familiar with the test techniques before taking the examinations.

TABLE 44.—*National Board Examinations in Part 1, 1922-1953*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February, 1953	465	375	38	52	12.1
June, 1953	2,661	1,682	749	230	12.0
September, 1953	1,152	809	193	150	15.6
Totals	4,278	2,866	980	432	13.0
1922	888	203	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,654	986	508	160	14.0
1939	1,733	1,048	460	225	17.7
1940	1,653	1,069	375	209	16.4
1941	1,640	1,087	346	207	16.0
1942	1,867	1,204	471	192	13.8
1943	2,656	1,441	962	253	14.9
1944	4,229	2,326	1,465	438	15.9
1945	3,865	2,106	1,475	284	11.8
1946	3,148	1,695	1,189	264	13.5
1947	3,514	1,844	1,352	318	14.7
1948	3,807	2,178	1,262	367	14.4
1949	3,823	2,337	1,243	243	9.4
1950	3,678	2,358	986	334	9.0
1951	3,520	2,153	1,038	329	9.3
1952	3,989	2,467	1,147	375	9.4
1953	4,278	2,866	980	432	13.0
Totals	64,776	39,196	19,330	6,250	13.7

In the following paragraphs data are presented regarding the examinations conducted and the issuance of certificates by the National Board. This is the 32nd annual compilation of these statistics. The board's first examination was given October, 1916. From that date and up to and including a test given in June, 1921, 11 examinations were given and 268 candidates were certified. The numbers examined during this period are recorded in annual figures in table 43.

Since 1922 the examination has been divided into three parts, which must be taken and completed in the following sequence: part 1, a written examination in six basic science subjects; part 2, a written examination in five major clinical divisions and their component subjects or subdivisions; and part 3, an oral and practical evaluation of the candidates' ability in critical observation, in diagnostic acumen, and in the principles of therapy. The examination in part 3 is divided into four periods, allocated to the following four major elements of general practice; clinical medicine, pediatrics, clinical surgery, and obstetrics and gynecology.

Examinations in parts 1 and 2 are held in the winter and late spring at medical schools in the United States and Canada. An additional examination in part 1 is held in September and in part 2 in June. These examinations are held at those medical schools that can conveniently accommodate them, if five or more candidates have registered. The examinations in part 3 are given under the direction of local subsidiary boards in 31 centers in June of each year and at times that are announced well in advance of the date of the examination. The dates of all examinations are posted on college bulletin boards and published in THE JOURNAL and in the "National Board Examiner," the official publication of the National Board of Medical Examiners.

The tables that are hereinafter presented refer to the results of examinations in all three parts since 1922, including those who passed and failed examinations and those certified.

TABLE 45.—*National Board Examinations in Part 2, 1922-1953*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February, 1953	103	101	...	2	1.0
April, 1953	1,572	1,532	1	39	2.4
June, 1953	435	422	...	13	2.9
Totals	2,200	2,145	1	54	2.4
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	884	0	54	5.8
1940	1,028	963	9	56	5.5
1941	1,001	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
1943	1,861	1,805	0	56	3.0
1944	1,405	1,350	0	55	3.9
1945	1,599	1,565	0	34	2.1
1946	1,825	1,782	0	43	2.4
1947	1,641	1,613	0	28	1.7
1948	1,742	1,725	0	17	0.9
1949	1,737	1,691	0	46	2.6
1950	1,863	1,837	0	26	1.3
1951	2,045	2,017	0	28	1.4
1952	2,017	2,001	0	16	0.8
1953	2,200	2,145	1	54	2.4
Totals	33,092	31,612	47	1,433	4.3

A candidate is eligible for part 1 who has completed successfully the first two years of work in an approved medical school. Candidates are required to take all six subjects of part 1 at one examination period unless entitled to take an incomplete examination. An incomplete examination is allowed candidates taking part 1 at the end

of their second year in a medical school where the third-year curriculum includes courses in one or two subjects of this part. The examinations in the subjects not yet completed are therefore postponed and may be taken at any examination period after the candidate has completed them in his medical school. They are recorded in these tabulations under the heading "Incomplete Examinations" and are excluded from the calculations referring to the percentage of failures.

A candidate is eligible for part 2 who has passed part 1 and has completed successfully a four year medical course in an approved medical school.

A candidate is eligible for part 3 if he has passed parts 1 and 2, received the degree of Doctor of Medicine, and served at least one year in a hospital approved by the American Medical Association or by the Canadian Medical Association. Under special circumstances, consideration may be given to service in a laboratory, the nature of which is acceptable to the National Board as the equivalent of hospital service.

TABLE 46.—*National Board Examinations in Part 3, 1922-1953*

Year	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
1939	770	729	41	5.3
1940	792	771	21	2.7
1941	910	885	25	2.7
1942	1,054	1,041	13	1.2
1943	1,230	1,213	17	1.4
1944	1,168	1,146	22	1.8
1945	1,245	1,232	13	1.0
1946	1,634	1,613	21	1.2
1947	1,741	1,723	18	1.0
1948	1,715	1,700	15	0.9
1949	1,685	1,674	11	0.6
1950	1,752	1,736	16	0.9
1951	1,738	1,708	30	1.7
1952	2,128	2,036	92	4.3
1953	2,039	1,979	60	2.9
Totals	28,345	27,626	719	2.5

Tables 44 and 45 record the results of examinations given in parts 1 and 2 during 1953 and for each year since 1922. The data shown represent examinations conducted rather than persons examined. The tabular data include candidates who fail and are reexamined during the same year and those who pass parts 1 and 2 in the same year.

In 1953, 4,278 examinations were given in part 1; 2,866 passed, and 432, or 13%, failed. There were 980 incomplete examinations given. In part 2, 2,200 examinations were held; 2,145 passed, and 54, or 2.4%, failed. Incomplete examinations are seldom given in this part. There was one such examination given in 1953.

Since 1922 a total of 64,776 examinations have been given in part 1 and 33,092 in part 2. During this period 39,196 passed part 1 and 31,612 passed part 2. In the 32 year period shown, there have been 6,250 failures in part 1 (13.7%) and 1,433 (4.3%) in part 2. The increasing value of the National Board certificate is reflected in the figures presented in these two tables, particularly since 1943. In 1953 the number of examinations in these two parts exceeded all previous years including 1943 when medical schools were operating on an accelerated program.

In 1953, 2,039 tests were given in part 3; 1,979 passed, and 60 (2.9%) failed. Results of examinations in part 3 in 1953 and in the 31 preceding years are given in table 46. In 31 years, 28,345 were tested, of whom 27,626 were granted the certificate of the board. The percentage of failures in this final examination in 32 years was 2.5.

The 1,979 physicians certified as diplomates in 1953 represented 62 medical schools in the United States, 6 in Canada, and 14 medical schools of other countries. The school and the number of examinees from each are included in table 47.

TABLE 47.—*Diplomates from Individual Medical Schools, 1953*

United States	
College of Medical Evangelists	22
University of Colorado	2
Yale University	64
Georgetown University	97
George Washington University	85
Howard University	17
Emory University	1
Chicago Medical School	63
Northwestern University	50
Stritch School of Medicine	5
Univ. of Chicago School of Med.	13
University of Illinois	12
Indiana University	5
State University of Iowa	5
University of Kansas	3
University of Louisville	3
Tulane University	6
Johns Hopkins University	8
University of Maryland	4
Boston University	67
Harvard Medical School	125
Tufts College Medical School	108
University of Michigan	3
University of Minnesota	17
St. Louis University	6
Washington University	7
Creighton University	10
University of Nebraska	1
Albany Medical College	45
State Univ. of N. Y., Brooklyn	98
University of Buffalo	64
Columbia University	93
Cornell University	83
New York Medical College	106
New York University	109
University of Rochester	52
State Univ. of N. Y., Syracuse	44
Duke University	61
Bowman Gray School of Med	2
University of Cincinnati	2
Western Reserve University	7
Ohio State University	8
University of Oklahoma	3
University of Oregon	7
Hahnemann Med. Coll.	74
Jefferson Medical College	22
Temple University	100
University of Pennsylvania	28
Woman's Medical College	24
University of Pittsburgh	2
Medical College of S. C.	4
University of Tennessee	1
Meharry Medical College	9
Vanderbilt University	2
University of Texas	1
University of Utah	4
University of Vermont	30
University of Virginia	5
Medical College of Virginia	7
University of Washington	2
University of Wisconsin	1
Marquette University	8
Canada	
Dalhousie University	1
Queen's University	1
University of Western Ontario	2
University of Toronto	6
McGill University	26
University of Montreal	1
Foreign	
Penn. Medical School, Shanghai	2
Nat'l Coll. of Med. of Shanghai	2
National Central Univ. College of Medicine, Nanking	1
Univ. of Cambridge Faculty of Medicine	1
U. of London Faculty of Med.	1
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	1
Queen's University Faculty of Medicine, Belfast	1
National Univ. of Ireland	2
American Univ. of Beirut School of Medicine	5
University of the Philippines	3
University of Witwatersrand	1
University of Geneva	3
University of Lausanne	1
University of Zurich	1

The figures presented in the preceding tables represent examinations given. The number of persons tested during any one year is recorded for the 32 year period in table 48. The classification "Passed" or "Failed" in cases in which more than one examination has been taken in a given year are based on the results of the last examination

during the year in question. Thus, if in 1953 a candidate passed part 1 but at a subsequent examination in 1953 he failed part 2, he is computed in this table as having failed. On this basis figures computed indicate that there were 7,786 persons who took at least one test of the National Board in 1953. In 1953 the number of candidates examined was greater than any other year. In all, 112,947 persons were examined in one or more of the annual examinations, of whom 91,437 passed, 14,520 took incomplete examinations, and 6,990 (7%) failed.

In 1953, there were 3,136 licenses to practice medicine issued by endorsement of the certificate of the National Board of Medical Examiners in 45 states, the District of Columbia, Alaska, Guam, Hawaii, and Puerto Rico. The number registered by each of these licensing boards is recorded in table 49. There have been 25,970 licenses issued on the basis of endorsement of the board's certificate by the various states, territories, and outlying possessions since 1915.

The National Board has not set itself up as a national licensing body. It recognizes that it is the function of the individual states to determine who shall practice within their borders and to maintain high standards of medical practice in accordance with their own rules and regulations. The state licensing boards receive applications after the completion of the formal training, when the physician seeks a license to practice his profession.

TABLE 48.—*Parts 1, 2, and 3, Excluding Duplications, 1922-1953*

Year	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,992	2,308	493	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,597	363	228	8.1
1941	3,318	2,749	332	237	7.9
1942	3,007	3,014	391	202	6.3
1943	4,514	3,671	606	237	6.1
1944	5,363	4,235	759	369	8.0
1945	5,614	4,468	886	260	5.5
1946	5,912	4,730	898	284	5.7
1947	6,249	4,965	1,002	282	5.3
1948	6,389	5,194	902	293	5.3
1949	6,493	5,376	880	237	4.2
1950	6,590	5,630	665	301	4.5
1951	6,602	5,601	699	302	4.5
1952	7,334	6,204	729	401	5.5
1953	7,786	6,708	584	494	6.8
Totals	112,947	91,437	14,520	6,990	7.0

The National Board is opposed to any attempt on the part of a medical school to shape its curriculum with the primary purpose of preparing students for these examinations. However, the broad scope of the subject matter now made possible by the multiple-choice techniques provides an opportunity for the major departments of a medical school, both preclinical and clinical, to learn more of the effectiveness of their own teaching. Examinations of part 1 or 2, or in some instances both parts, are a requirement in 13 schools. The board's examinations are taken on a voluntary basis by the entire student body, or a majority of the student body in five schools. The National Board has expressed the conviction that no one examination should be used as the only basis of evaluating the progress of students. It realizes that it is the obligation of each medical school to make the final decision on promotion or graduation of its students on the basis of all its information about them, of which the performance in a written test constitutes only a part.

TABLE 49.—*Licenses Granted on the Basis of National Board Certificates, 1953*

Alabama	8	New Hampshire	22
Arizona	18	New Jersey	163
Arkansas	1	New Mexico	4
California	397	New York	810
Colorado	29	North Carolina	46
Connecticut	167	North Dakota	13
Delaware	2	Ohio	104
District of Columbia	102	Oklahoma	6
Georgia	23	Oregon	21
Idaho	7	Pennsylvania	209
Illinois	100	Rhode Island	19
Indiana	1	South Carolina	8
Iowa	19	South Dakota	5
Kansas	15	Tennessee	19
Kentucky	20	Utah	12
Maine	33	Vermont	22
Maryland	105	Virginia	50
Massachusetts	287	Washington	42
Michigan	51	West Virginia	23
Minnesota	58	Wisconsin	11
Mississippi	5	Wyoming	4
Missouri	26	Alaska	4
Montana	3	Guam	1
Nebraska	8	Hawaii	14
Nevada	4	Puerto Rico	16
Totals			3,136

The membership of the National Board of Medical Examiners includes representation from the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges, the Federation of State Medical Boards of the United States, the federal services, and members elected at large. The officers of the board are:

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THE FIFTY-SECOND ANNUAL REPORT ON MEDICAL LICENSURE

The fifty-second annual report on medical licensure by the Council on Medical Education and Hospitals, which appears in this issue of THE JOURNAL, presents statistics concerning the medical examination and licensure of physicians in the United States and its territories and outlying possessions for the year 1953 and summarizes trends over many years. Also included is information pertaining to the current regulations for medical licensure.

During 1953 there were 14,434 licenses to practice medicine issued by the medical examining boards of the 48 states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico. Of the licenses issued, 6,565 were granted after written examination and 7,869 by reciprocity or endorsement of state licenses or the certificate of the National Board of Medical Examiners. There was an increase of 1,206 in the total number of licenses issued in 1953 as compared with the previous year. This increase included an additional 353 issued by examination and 853 by reciprocity or endorsement of credentials.

The data presented indicate that last year 7,276 physicians received their first license to practice medicine and thus represent additions to the medical profession. In this group there were 685 foreign-trained physicians. In the same period there were about 3,421 deaths of physicians reported, so that there was a net gain of 3,855 in the physician population in the United States and its territories and outlying possessions. The figure represents an increase of 799 in comparison with the net increase in 1952.

Estimated figures indicate that, on December 31, 1953, the total number of physicians in continental United States was 218,522, of whom 156,333 were estimated to be in private practice. This figure includes 6,677 licensed physicians engaged in full-time research and teaching and physicians employed by insurance companies, industries, and health departments. It also includes 29,161 interns and residents in hospitals and those engaged in hospital administration, 9,311 physicians retired or not in practice, and 17,040 physicians in the government services.

The percentage of failures in the written examination from existing approved medical schools in the United States was 3.8%; of graduates of approved medical schools in Canada 4.1% failed; of the graduates of medical schools in the United States no longer in operation 50% failed; 70.2% of the graduates of unapproved medical schools at one time existing in the United States failed; the graduates of schools of osteopathy admitted to medical licensure examinations in the several states had 13.4% failures; and 45.5% of the foreign-trained physicians examined for medical licensure last year failed. The total percentage of failures was 13%.

The report includes the preprofessional and professional educational requirements of each licensing board, the states requiring an internship for licensure, regulations pertaining to the registration of interns and residents, licensure on the basis of government credentials, the issuance of temporary and limited licenses, and states requiring annual registration of physicians.

The second section of this report pertains to the results of examinations given by the 21 boards of examiners in the basic sciences. Certificates of proficiency in the basic sciences were issued to 5,753 candidates in 1953. Of these certificates 3,854 were issued after written examination and 1,899 by exemption, waiver, reciprocity, or endorsement. Among graduates of approved medical schools in the United States, foreign-trained physicians, graduates of unapproved medical schools in the United States, medical students, and dentists who took the written examination, 14.7% failed. There were 28.6% failures in the written examination by other practitioners.

The final section of the report deals with the examinations given by the National Board of Medical Examiners. The examination of the National Board is given in three parts; the first part may be taken after completion of the sophomore year in medical school, the second part on completion of the medical course, and the third part after a year of hospital service. There were 7,786 persons who took at least one of the tests of the National Board in 1953, and 1,979 were certified as diplomates. The medical licensing boards of 39 states, the District of Columbia, the territories of Alaska and Hawaii, Puerto Rico, and the Canal Zone recognize the certificate of the National Board of Medical Examiners as an adequate qualification for a medical license.

In 1953, there were 3,133 licenses to practice medicine issued by endorsement of the certificate of the National Board in 45 states, the District of Columbia, Alaska, Guam, Hawaii, and Puerto Rico, representing graduates of 62 medical schools in the United States, 6 in Canada, and 14 medical schools of other countries.

The presentation of this study is made available through the cooperation of the various examining and licensing boards. For their cooperation the Council and THE JOURNAL wish to express appreciation.

FEW PHYSICIANS RETIRE

Of the 22,296 physicians in the age group 65-74 in the United States in April, 1950, 18,770 (84.2%) were in active private practice according to data in the appendix of Bulletin 94 of the Bureau of Medical Economic Research. Only 15.8% were not engaged in active private practice. Among these 3,526 not in active private practice were housewives and others who had practiced for only a few years, if any, and several hundred who were still employed by private or public employers; still others had retired from private or public employment, probably on a pension financed in whole or in part by the employer. Although these newly published data do not separate the self-employed from the employed who are still in active private practice, it seems strange that the House Committee on Ways and Means should continue to consider the provisions of the administration bill on social security, H. R. 7199, 83rd Congress, which would force self-employed physicians between the ages of 65 and 75 to pay social security taxes while denying them until age 75 an Old Age and Survivors Insurance pension if they earned $1,000 or more a year. If the pattern of 1950 is continued, 8 or 9 physicians out of 10 would be required to pay social security taxes but would receive no pension from age 65 to 75. This new statistic adds force to the objections raised by Dr. F. J. L. Blasingame,[1] who spoke on behalf of the American Medical Association against compulsory inclusion of all physicians under Social Security before the House Committee on Ways and Means on April 6, 1954.

LICENSURE OF GRADUATES OF FOREIGN MEDICAL SCHOOLS

A study of the current report on medical licensure reveals that in many states the licensure of foreign-trained physicians has been given serious consideration by the authorities and that methods are being developed to provide for the licensure of such physicians that will not lower the standards of medical practice in the United States. Foreign-trained physicians may apply for licensure to all but 11 licensing boards. Seven boards do not require citizenship, while 14 boards require that the applicant file first citizenship papers. Twenty-seven boards stipulate that the foreign-trained physician must serve an internship or obtain further medical training in the United States.

The current list of 50 medical schools in 14 countries compiled by the Council on Medical Education and Hospitals in collaboration with the executive council of the Association of American Medical Colleges is included in the report. These two bodies recommend that graduates of these schools be considered on the same basis as graduates of approved medical schools in the United States. This is offered as an advisory list for the use of any agency or organization that may find it useful. The position of the Council with respect to schools not named in the list is that they neither approve nor disapprove such credentials. The credentials of graduates not listed must be evaluated by other organizations or institutions to whom graduates of the institutions apply for recognition. Sixteen licensing boards stipulate that recognition is limited to graduates of schools on the list. Other boards find the list useful in the evaluation of credentials.

Mention is made in the report that the Council has prepared a compendium of information concerning foreign medical schools and the status of foreign medical credentials in the United States as an aid to foreign-trained physicians which is available upon request.

Last year graduates of 175 foreign medical schools and holders of the certificate of one of the licensing corporations of Great Britain were examined by 36 licensing boards. Graduates of medical schools in the Philippines, Iceland, 12 South and Central American countries, 28 countries in Europe, and 8 in Asia were represented at examinations. The number examined totaled 1,463. The number who were successful was 796; failures numbered 667, or 45.5%. Of the 796 foreign-trained physicians licensed in 1953, 685 were not previously licensed in the United States and therefore represent additions to the physician population in the United States.

The Council, the Association of American Medical Colleges, the Federation of State Medical Boards, and other interested agencies are now engaged in discussions looking toward a reevaluation of the problem created by the influx of foreign-trained physicians migrating to the United States to pursue their profession.

INDUSTRIAL HEALTH FORUM

On the occasion of the dedication of the Martha Tracy Memorial for Preventive Medicine, March 11, at the Woman's Medical College of Pennsylvania, a health assurance forum was conducted. The proceedings of the forum, which stressed the conservation of human resources in industry, have been published as a mimeographed pamphlet. In the keynote address Dr. Burgess L. Gordon, president of the college, stated that when employees are sick and must be absent from work the whole national economy suffers. The magnitude of the problem is indicated by the fact that in the United States about 2 million industrial workers are absent because of sickness every working day. Dr. Anna M. Baetjer, in speaking of environmental influences, divided the factors that may cause occupational diseases into physical (such as extremes of temperature, harmful radiation, excessive noise, and abnormal barometric pressure), chemical (such as

1. Statement by Dr. F. J. L. Blasingame on H. R. 7199 Before Committee of House of Representatives, Organization Section, J. A. M. A. 154: 1427 (April 24) 1954.

silica dust, toxic metallic dusts and fumes, organic vapors, and gases), infectious, and mechanical (such as vibration, friction, pressure, and excessive lifting). She stated that in addition to the specific occupational diseases the role of the occupational environment on susceptibility to disease must be considered. The prevention of occupational diseases depends on the cooperation of persons trained in medicine, physiology, toxicology, engineering, chemistry, physics, and other disciplines. Industries are becoming increasingly aware of the importance of the health of their employees and are spending vast sums on improving the working environment as well as other means of disease prevention.

Dr. Francis J. Braceland spoke of mental hazards in industry, a field to which he believes too little attention has been paid in the past. He cited an experiment that showed that regardless of the working conditions, productivity depended on the *esprit de corps* of the workers. Many of the hazards are brought to the job by the worker. These have to do with personality maladjustment, mood disorders, deep-seated inferiority feelings, and the like. Such personality disorders may result in absenteeism, accidents, alcoholism, illness, job dissatisfactions, and office feuds. In the removal of these hazards the medical department, the personnel department, and the immediate supervisors of the employees must work as a team. The most important member of this team is usually the employee's supervisor, and for this reason supervisors must be taught the fundamentals of interpersonal relations. Dr. William A. Sawyer discussed the problem of absenteeism and referred to the experiment at the Hawthorne Works of Western Electric, in which it was shown that the employees with high absence rates had had frequent minor illnesses and a large number of major illnesses, frequent injuries and accidents, and many emotional ups and downs. They were, in general, discontented, unhappy, and difficult to get along with and to supervise, whereas in a group with a good attendance record the opposite conditions prevailed. In order to get at the root of this problem, employees with a record of excessive absenees should be recognized early and an effort made to discover the underlying cause and to apply corrective measures.

Dr. Ronald F. Buchan outlined the health service needs of small and large industries and divided these into services related to the individual workers (such as physical examinations, health counseling, health education, and treatment of occupational illness) and services related to the environment (detection and elimination of mechanical hazards and toxic exposures, maintenance of plant sanitation, and control of waste material to prevent water and air pollution). Dr. Buchan stressed the benefits to be derived from industrial medical services, chief among which are the maintenance and conservation of health, reduction of labor turnover, reduction of accidents and occupational diseases, reduction of absenteeism, and increase in production. Speaking of the proper age for retirement, Dr. Earl C. Bonnett called attention to the large number of men over 65 years of age employed full time or part time and stressed the need for a more realistic approach to the problem. Dr. Donald A. Covalt, in further discussing this problem, advocated the establishment of medical boards to survey employees and establish the amount of time they could be usefully employed after reaching an age when their capacity for work is decreasing. Dr. W. E. Chamberlain forcefully objected to the present preoccupation with retirement and stated that industry should concern itself with the reorientation of aging employees. He pointed out that if a man is successful and enjoying his work retirement can have a tragic effect on his personality.

An increasing demand for study of industrial health problems and the application of concrete measures for their relief was responsible for the sponsoring of this forum. The effort, time, and money expended will have been justified only if its influence extends beyond the community in which it was held and leads to further consideration of these and similar problems throughout the nation and to the taking of appropriate remedial steps. There is a growing tendency on the part of industrial firms, when the health problems for which they are responsible are clearly delineated, voluntarily to undertake their elimination. This is the American way and is far better than dependence on governmental control.

REGISTRATION UNDER THE HARRISON NARCOTIC ACT

Physicians who are registered under the Harrison Narcotic Act or under the Marihuana Tax Act must effect reregistration on or before July 1 to avoid a penalty. Each year, despite the annual warnings in THE JOURNAL, this requirement is overlooked by some physicians, and unpleasant consequences follow. Failure to register adds a penalty of 25% to the tax payable and, in addition, subjects the physician to the possibility of a fine not exceeding $2,000 or imprisonment for a maximum of five years, or to both. The Commissioner of Internal Revenue has in past years given some tardy registrants the choice of paying sums by way of compromise, a procedure authorized by law, or accepting criminal prosecution. If this procedure does not produce the required promptness in reregistration, the commissioner will have no choice but to institute criminal prosecution.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

Our Latin American colleagues have a very high esteem for the American Medical Association, and they are in agreement with its philosophies. This was the impression I received everywhere I went during my recent trip to South America in the company of Mrs. McCormick and Dr. and Mrs. David B. Allman. The principal purpose of the journey was to attend the International Congress of the International College of Surgeons at São Paulo, Brazil. We also stayed a few days each at Lima, Peru, and Rio de Janeiro. On our way back we made an overnight stop at San Juan, Puerto Rico.

Dr. Allman and I were each called on to give a number of talks. In São Paulo, where the principal addresses were made, Dr. Allman discussed "The Delusion of Socialized Medicine," and my subject was "The Malignancy of Socialized Medicine." There were enthusiastic ovations at the conclusion of both the talks, and there is every indication that our colleagues in South American countries are opposed to any socialistic regime in medicine.

A great deal of progress is being made by the countries we visited in the improvement of medical education and medical care. The physicians are enthusiastic about the future and are working diligently toward achieving the highest standards in medical practice. Their chief obstacles to progress are gradually being overcome through health education and the support by their respective governments of cooperative health programs backed by the United States, the World Health Organization, and private agencies such as the Rockefeller and Kellogg foundations.

The South American physicians we met made it quite clear that they believe the American Medical Association is the outstanding organization of its kind. We were elected to honorary membership in the Peruvian Surgical Society and the São Paulo Academy of Medicine. The Paulista doctors also named me their goodwill delegate to the United States. These honors indicated a definite affection not so much for the individual recipients but for the physicians of the country that they represented. In San Juan, members of the medical society whom I addressed expressed considerable enthusiasm over the visit of an A. M. A. president—the second, I believe, in 35 years.

I have always held to the belief that medicine should recognize no international boundaries. We are members of a profession dedicated to a great humanitarian work—the healing of the sick and the injured. The pooling of our knowledge and the free exchange of medical information can accrue only to the benefit of mankind. Meetings of international scope should be encouraged, and the physicians of neighboring nations should cultivate each other's friendship through regular visits to their respective countries. The development of mutual respect and understanding naturally follows such a program.

Our relationship to the Puerto Rican medical profession is, of course, much closer than that which I have just outlined. It is one of the territories represented in the A. M. A. The territorial societies should be especially encouraged to build up their respective memberships and to take an increasingly active role in A. M. A. affairs. The best way I know of encouraging these organizations is by showing more interest in the problems that concern them.

In the journey to and from South America, we logged about 50 hours of actual flying time. This gave me an opportunity to reflect on a number of things besides the immediate purpose of the trip. One of these is the threat of constant condemnation that faces America today despite the tremendous progress in the medical and hospital field and our many technological advances.

I am afraid that we are taking for granted our numerous blessings and our remarkable progress in search of a better life. Recognition through accomplishment has become so commonplace that we find ourselves competing on the basis of that which will command the largest headlines, the greatest number of column inches in our newspapers and magazines, and the number of times we are mentioned by radio and television news commentators. Today the spectacular seems to be more appealing than the conventional and human frailties are exploited by newspapers and periodicals. To wash away all that is good just to reveal a mustard seed of evil and then magnify it in emotional fashion is basically dishonest. Actually we are all guilty—in our professions, in our businesses, and even in our homes. In training children, we make much more of a fuss over what they do wrong in a split second of forgetfulness than for the hours they have been perfect angels.

Today, when we have accomplished so much that is good and honest, upright, and just, we are criticized because it is not utopian. Medical care and those who have contributed to its progress find themselves engulfed in this criticism. The time has come for us to embark on a campaign to "Accentuate the Positive." Let us start emphasizing the good things in life—the progress that has been made in our communities, state and nation—in our businesses and professions.

I sincerely hope that all of the readers of this page will be able to attend the A. M. A.'s Annual Meeting in San Francisco next month. It promises to be one of the best meetings we have ever had. I shall be looking forward to greeting you personally.

EDWARD J. MCCORMICK, M.D., Toledo, Ohio

ORGANIZATION SECTION

IMPROVISED HOSPITALS FOR CIVIL DEFENSE

If this country should be attacked by nuclear weapons, the existing hospitals, even if expanded, would be entirely inadequate to cope with the vast numbers of casualties to be expected. A survey of the hospital facilities in the nation's 70 critical target areas reveals about 650,000 registered hospital beds in all categories. When we consider the prospect that, according to national planning councils, more than 5 million

Fig. 1.—Surgical equipment and supplies for the civil defense temporary hospital.

surviving casualties could result from multiple simultaneous attacks on our major cities, we begin to appreciate the gravity of our situation. Hospitals are generally located in the congested downtown area. Therefore most would be knocked out in an atomic attack and, by the same token, many of the physicians and nurses would be lost. Furthermore, many are tuberculosis or neuropsychiatric hospitals, and are not always suited for general or emergency use.

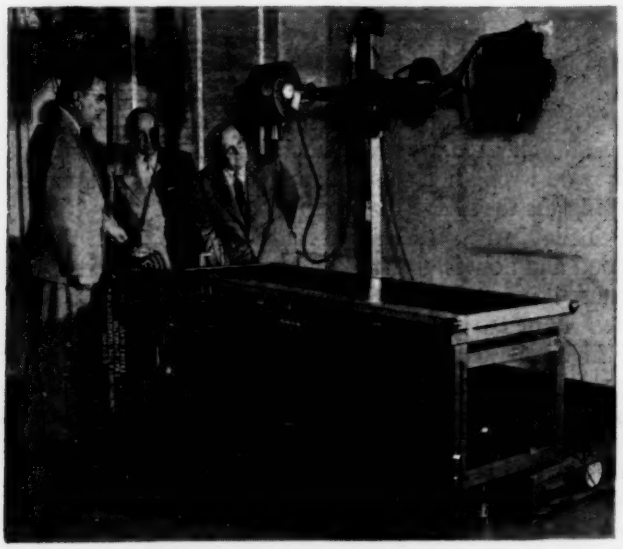


Fig. 2.—Sixty-second x-ray machine.

It has been estimated by the Federal Civil Defense Administration that supplies and equipment for 5,000 improvised hospitals should be purchased for the federal reserves of back-up medical supplies to be available for use in schools or other buildings on the periphery of target cities in the event of an emergency. Another 1,000 improvised hospitals should be purchased by the states under the Federal Contributions Program. The mission of the improvised hospital would be to furnish early hospitalization to the seriously sick and injured casualties in, or as close as possible to, the stricken area for lifesaving initial and reparative treatment or surgery. Such casualties will include all segments of the population.

The hospital, as designed by the Federal Civil Defense Administration, is a complete 200 bed unit, transportable on a single tractor-trailer truck. It weighs approximately 13.5 tons, contains some 288 different items, and will take up approximately 2,000 cu. ft. for storage. On arrival at a predesignated building not more than two or three stories high, it can be

Fig. 3.—Folding operating table and its equipment.

assembled in about 4 hours by about 30 professionals, and trained and untrained auxiliaries, and will require a minimum of about 14,000 sq. ft. of floor space. In event of a secondary emergency, it can be repacked and relocated. The pictures illustrate the types of surgical equipment and supplies, laboratory equipment, x-ray machines, and operating tables included with the improvised hospital approved by the Federal Civil Defense Administration.

A modern school building would furnish 10 rooms suitable for wards of 20 patients each, 3 operating rooms, and other space adaptable for ancillary services. Generators and a 500-gallon nylon water tank are included in the list of supplies. The cost of the 200-bed unit with all its cots, surgical instruments, drugs, laboratory supplies, x-ray machine, sterilizers, portable

generators, and other equipment, is approximately $26,500. The unit may be purchased by states on a matching fund basis with the federal government.

DISTINGUISHED SERVICE AWARD

The Distinguished Service Gold Medal award, given annually for "meritorious services in the science and art of medicine," is one of the highest and most cherished honors bestowed by the American Medical Association. The award will be given for the 17th consecutive year during Dr. Walter B. Martin's inaugural ceremony at San Francisco. Any member of the A. M. A. may submit nominations for this award. The nominations should be sent to Dr. George F. Lull at A. M. A. headquarters not later than June 5. Each nomination should be accompanied by a full and complete record of the doctor's career in medicine. It is hoped that a large number of new names will be received this year. These, of course, will be added to the list of holdover nominees for consideration at one time.

REFERENCE COMMITTEES OF THE HOUSE OF DELEGATES

The Speaker of the House of Delegates of the American Medical Association, Dr. James R. Reuling, New York, has appointed delegates to serve on the reference committees of the House at the San Francisco Meeting, as follows:

Amendments to the Constitution and Bylaws

R. B. Chrisman Jr., *Chairman,* Florida
Arthur A. Brindley, Ohio
Harold F. R. Brown, New York
Edward L. Compere, Section on Orthopedic Surgery
Raymond F. Peterson, Montana

Board of Trustees and Secretary, Reports of

Eugene F. Hoffman, *Chairman,* California
W. L. Crawford, Section on Pediatrics
B. O. Edwards, North Carolina
Andrew A. Eggston, New York
Cleon A. Nafe, Indiana

Credentials

Walter E. Vest, *Chairman,* West Virginia
Paul Baldwin, Missouri
Thomas M. d'Angelo, New York
Harlan English, Illinois
James P. Hammond, Vermont

Executive Session

Charles L. Shafer, *Chairman,* Pennsylvania
Stephen E. Gavin, Wisconsin
William H. Halley, Colorado
Hollis E. Johnson, Section on Diseases of the Chest
J. Morrison Hutcheson, Virginia

Hygiene, Public Health, and Industrial Health

Warde B. Allan, *Chairman,* Maryland
George Braunlich, Iowa
R. T. Johnstone, Section on Preventive and Industrial Medicine and Public Health
Charles H. Richardson Sr., Georgia
Dwight L. Wilbur, California

Insurance and Medical Service

Thomas J. Danaher, *Chairman,* Connecticut
William F. Costello, New Jersey
Val H. Fuchs, Louisiana
B. R. Kirklin, Section on Radiology
Sam J. McClendon, California

Legislation and Public Relations

Floyd S. Winslow, *Chairman,* New York
William C. Chaney, Tennessee
Fred H. Muller, Illinois
Truman C. Terrell, Texas
Elmer P. Weigel, New Jersey

Medical Education and Hospitals

W. Andrew Bunten, *Chairman,* Wyoming
Charles G. Hayden, Massachusetts
Willis H. Huron, Michigan
John J. H. Keating, New York
Laurence S. Nelson Sr., Kansas

Medical Military Affairs

Bernard Klein, *Chairman,* Illinois
Homer M. Izumi, Hawaii
Frank A. MacDonald, California
Clifford C. Sherburne, Ohio
James L. Whitehill, Pennsylvania

Miscellaneous Business

R. J. Azzari, *Chairman,* New York
Wyman D. Barrett, Michigan
John F. Burton, Oklahoma
John K. Glen, Texas
Raymond M. McKeown, Oregon

Reports of Officers

George A. Earl, *Chairman,* Minnesota
Clark Bailey, Kentucky
Philip S. Foisie, Massachusetts
Karl S. J. Hohlen, Nebraska
Hugh H. Hussey Jr., District of Columbia

Rules and Order of Business

Herbert B. Wright, *Chairman,* Ohio
Henry T. McGuire, Delaware
Milford O. Rouse, Texas
H. Kenneth Scatliff, Illinois
Dexter H. Witte, Wisconsin

Sections and Section Work

Willard A. Wright, *Chairman,* North Dakota
J. Arnold Bargen, Minnesota
W. Palmer Dearing, U. S. Public Health Service
Gilson Colby Engel, Pennsylvania
John F. Lucas, Mississippi

Tellers

Carl A. Grote, *Chairman,* Alabama
William R. Brooksher, Arkansas
Wesley W. Hall, Nevada
Louis W. Jones, Pennsylvania
B. E. Montgomery, Illinois

Sergeants-at-Arms

Reuben A. Benson, Oregon
F. Sanchez-Castaño, Puerto Rico
William Weston Jr., *Master Sergeant,* South Carolina

MEETING OF SECTIONS ON RADIOLOGY AND UROLOGY AT SAN FRANCISCO

It has been necessary to change the time and place of the joint meeting of the Section on Radiology with the Section on Urology, which was listed in the Preliminary Program in the May 8 issue of THE JOURNAL, pages 156 and 157. The joint meeting will be held on Wednesday morning, June 23, in the Masonic Temple Auditorium instead of on Tuesday afternoon, June 22 in Hall 1 of the Masonic Temple. The meeting of the Section on Radiology previously scheduled for Wednesday morning, June 23, will be held on Friday morning, June 25.

CALLING ALL RESOLUTIONS!

Speaker James R. Reuling requests again that copies of resolutions to be introduced in the House of Delegates at the A. M. A. Annual Meeting in San Francisco in June be forwarded to the Secretary's office. Under present procedure of the House, multiple copies of all resolutions must be made. The work of the House and its staff will be greatly facilitated if copies can be made at the headquarters office in Chicago in advance and then shipped to San Francisco.

MEDICAL NEWS

CALIFORNIA

One Year Health Survey.—Door-to-door interviews to determine the health of California's population were recently instituted in widely scattered areas of the state, according to Dr. Malcolm H. Merrill, state health director. About 35,000 persons in 12,000 California homes will be checked by 24 interviewers from the U. S. Bureau of the Census during the course of the one year survey, to uncover the amount and nature of illnesses and accidents of all kinds not usually reportable to health agencies, to obtain a comparison of rural and urban health, and to determine whether the health pattern is changing. The project, under the direction of Dr. Lester Breslow, chief, state health department's Bureau of Chronic Diseases, is financed by grants totaling $207,000 from the U. S. Public Health Service.

Society News.—Newly elected officers of the Northern California Society of Allergy include Dr. Lazarre John Courtright, San Francisco, president; Dr. Minnola Stallings, San Francisco, vice-president; and Dr. Edward Matzger, San Francisco, secretary-treasurer.——Recently elected officers of the Metropolitan Dermatological Society of Los Angeles include: Dr. Fred Feldman, Beverly Hills, president; Dr. Irving A. Lewe, Montebello, vice-president; and Dr. Harold Price, North Hollywood, secretary.——At a meeting of the Los Angeles Society of Allergy, Dr. Ben C. Eisenberg, Beverly Hills, was elected president; Dr. Walter R. MacLaren, Pasadena, vice-president; and Dr. Abram M. Targow, Los Angeles, secretary-treasurer.——Dr. J. Maurice Robinson was installed as president at a recent meeting of the San Francisco Radiological Society. Dr. Charles S. Capp was chosen president-elect; Dr. Ivan J. Miller, secretary-treasurer; and Dr. Joseph Levitin, member of the executive board.——The Los Angeles Society of Ophthalmology and Otolaryngology recently elected the following officers: Dr. Harold Owens, president; Dr. Robert A. Norene, secretary-treasurer; Dr. Sol Rome and Dr. Wendell C. Irvine, chairman and secretary, respectively, section on ophthalmology; and Dr. Max E. Pohlman and Dr. Herschel H. Burston, chairman and secretary, respectively, section on otolaryngology.

CONNECTICUT

State Medical Election.—At the annual meeting in Hartford, Dr. Harold M. Marvin, New Haven, assumed the presidency of the Connecticut State Medical Society; Dr. Oliver L. Stringfield, Stamford, was named president-elect; Dr. Charles T. Schechtman, New Britain, was elected first vice-president and Dr. Israel S. Otis, Meriden, second vice-president; Dr. Creighton Barker, New Haven, was reelected executive secretary; Dr. Frank H. Couch, Cromwell, treasurer; and Dr. Stanley B. Weld, Hartford, editor of the *Connecticut State Medical Journal.*

Ricketts Medal to Dr. Paul.—Dr. John R. Paul of Yale University School of Medicine, New Haven, has received the Howard Taylor Ricketts medal of the University of Chicago, given annually as a tribute to the late Dr. Ricketts, who proved during the 1906 epidemic of Rocky Mountain spotted fever that the disease was transmitted by a tick and who three years later discovered the causative organism, now named in his honor. Dr. Paul has studied outbreaks of poliomyelitis in Alaska, Japan, Egypt, and the tropics, and infectious hepatitis among the troops in Germany. He was a member of the committee on virus research of the National Foundation for Infantile Paralysis, 1940 to 1948, a consultant to the secretary of war and director of the neurotropic Virus Disease Commission of the Army Epidemiology Board, 1941 to 1946, and chairman of virus and rickettsial study of the U. S. Public Health Service, 1946 to 1951. At the award ceremony, Dr. Paul spoke on infectious hepatitis.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

DISTRICT OF COLUMBIA

Interns and Residents Convention.—The Association of Former Interns and Residents of Freedmen's Hospital will hold its annual convention from May 31 to June 3 at the hospital in Washington, D. C. Dr. P. Randolph Higginbotham, Bluefield, W. Va., president of the association, will preside. A dinner address, "Public School Education in the United States Today and the Leaders of America Tomorrow," will be given by the Hon. Samuel Brownell, New Haven, Conn., U. S. commissioner of education, at 6:30 p. m., June 3, in Frazier Hall, Howard University.

ILLINOIS

Psychiatric Lecture.—In the concluding lecture of the series on treatment in psychiatry, at the North Shore Health Resort (225 Sheridan Road, Winnetka), Dr. Daniel Blain, Washington, D. C., will have as his topic, "The General Practitioner Can Contribute Toward Healthy Emotional Development," at 8 p. m., on June 2.

Personal.—Dr. Kellogg Speed, Highland Park, recently discussed "Replacement Arthroplasty Versus Arthrodesis of the Hip Joint" before the staff of the Veterans Administration Hospital, Long Beach, Calif.——Dr. J. Roscoe Miller, president of Northwestern University, Evanston and Chicago, has been elected a member of the board of directors of G. D. Searle & Company, Chicago.

Chicago

Alumni Reunion Banquet.—The Medical Alumni Reunion Banquet, University of Chicago School of Medicine, will be held at the Hotel Shoreland (dinner dress optional) at 6:15 p. m., June 10. The banquet will honor the 1954 graduating class, 1904 graduates of Rush Medical College, and graduates of Rush Medical College from 1881 to 1902 who are members of the medical alumni association. The program will include presentation of the Borden award, distinguished service awards, testimonial awards to Rush medical graduates, and gold keys to the medical alumni. Dr. Robert J. Hasterlik is in charge. Reservations ($6.50 each) may be obtained through the Medical Alumni Office at Billings Hospital.

Dr. Davis Named Lying-In Chief.—Dr. M. Edward Davis, a member of the University of Chicago Lying-In Hospital medical staff for the past 29 years, has been named chief of staff to succeed Dr. William J. Dieckmann, chairman of the department of obstetrics and gynecology, who has resigned his administrative post to devote full time to clinical activities and research as the Mary Campau Ryerson professor of obstetrics and gynecology. Dr. Davis, who was named the Joseph Bolivar DeLee professor of obstetrics in 1947, is the fourth administrator of the 59-year-old hospital. Recipient of the gold medal of the American Medical Association, he was honored with Dr. Fred L. Adair, Maitland, Fla., and Morris S. Kharasch, Ph.D., University of Chicago chemist, in 1935, for isolation and the successful application of ergonovine in childbirth, and in 1937 received the annual award of the Central Association of Obstetricians and Gynecologists for his work on the production of artificial ovulation.

IOWA

State Medical Election.—Newly elected officers of the Iowa State Medical Society include Dr. Gerald V. Caughlan, Council Bluffs, president; Dr. Lonnie A. Coffin, Farmington, president-elect; Dr. Clyde A. Boice, Washington, vice-president; Dr. Richard F. Birge, Des Moines, secretary; and Dr. N. Boyd Anderson, Des Moines, treasurer.

Degree in Hospital Administration.—The State University of Iowa has conferred on Mrs. Miriam Lovell Neff, Monticello, the doctor of philosophy degree in hospital administration. Mrs. Neff is the third person who has earned a doctorate in hospital leadership, according to Gerhard Hartman, superintendent of University Hospitals, Iowa City, who was awarded the first Ph.D. in hospital administration at the University of Chicago in 1942. Mr. Charles E. Burbridge, head of Freedmen's Hospital, Washington, D. C., was the second recipient. Mrs. Neff has been administrative associate in the State University of Iowa Hospitals and previously was administrative assistant to the superintendent of St. Barnabas Hospital in New York City.

KANSAS

Hospital Teletype System.—A teletype system has been installed to link nine hospitals in Kansas. The leased-wire network covers a 30,000 square mile area stretching from Pittsburg on the Kansas-Missouri border, to Del Norte in south central Colorado's San Luis Valley. The heart of the communications is in Wichita at the Wichita-St. Joseph Hospital. The system is said to be more economical than the long-distance telephone messages. The teletype message is written at both the transmitting and receiving stations, eliminating the chance for error.

LOUISIANA

Dr. Findley Goes to Georgia.—Dr. Thomas Palmer Findley, professor of clinical medicine at Tulane University of Louisiana School of Medicine, New Orleans, has been appointed to the Georgia Heart Association's chair of cardiovascular research at the Medical College of Georgia in Augusta. Dr. Findley, who has been head of the section of internal medicine at Ochsner Clinic for 12 years, was formerly affiliated with the University of Michigan, Ann Arbor, Washington University in St. Louis, and the University of Pennsylvania, Philadelphia. He has served as president and as secretary-treasurer of the Southern Society for Clinical Research and as president of the New Orleans Academy of Internal Medicine.

MARYLAND

Dr. Eagle Honored.—Dr. Harry Eagle, Bethesda, since 1936 a commissioned officer, U. S. Public Health Service, was awarded the 1953 gold medal for his achievements in medicine by the Phi Lambda Kappa medical fraternity at the annual national convention in Baltimore, Dec. 30, 1953. Dr. Eagle has been adjunct professor of clinical medicine at George Washington University School of Medicine, Washington, D. C., since 1948 and chief of the section on experimental therapeutics, Microbiological Institute, National Institutes of Health, since 1949. He is a member of the National Research Council and the Army Epidemiological Board and is associate editor of *Pharmacological Review* and the *Proceedings of the Society for Experimental Biology and Medicine*. He has been affiliated with Johns Hopkins University schools of medicine and hygiene and public health, Baltimore, the University of Pennsylvania School of Medicine, Philadelphia, and the National Cancer Institute, Bethesda.

MASSACHUSETTS

Dr. Cattell to Head the Lahey Clinic.—In accordance with the expressed lifetime wishes of the late Dr. Frank H. Lahey, Dr. Richard B. Cattell has been officially appointed director and president of the Lahey Clinic in Boston. Dr. Cattell also succeeds Dr. Lahey as surgeon in chief of the New England Baptist Hospital. In accordance with Dr. Lahey's plans, the clinic was left to the Lahey Foundation, a nonprofit organization incorporated under the laws of the commonwealth to undertake charitable, educational, public, and scientific projects. Recently appointed administrator of the clinic is Dr. James E. Fish, who for the past eight years has served as medical director of the Ellis Hospital in Schenectady, N. Y.

Appoint Clinical Professor of Pathology.—Dr. Benjamin Castleman, who has been on the Harvard faculty since 1935, has been appointed clinical professor of pathology at the Harvard Medical School and chief of the department of pathology at the Massachusetts General Hospital, with which he has been associated since 1931. In the new pathology laboratory building, to be constructed at the hospital in 1954, Dr. Castleman will continue to direct both the clinical and the research activities and will teach Harvard medical students. He is consulting pathologist of the Massachusetts Eye and Ear Infirmary, Veterans Administration Hospital, Boston, and Memorial Hospital, Worcester, and pathologist of Emerson Hospital, Concord.

MINNESOTA

Personal.—For his work in establishing radiological teaching programs in medical schools in India, Dr. Leo G. Rigler, Minneapolis, head, University of Minnesota radiology department, recently received the gold medal of the Radiological Society of North America.——Dr. Karl S. Klicka, director of St. Barnabas Hospital, Minneapolis, has been appointed director of Presbyterian Hospital in Chicago. Dr. Klicka has been affiliated with Allegheny General Hospital, Pittsburgh, Woman's Hospital, Detroit, Woman's Hospital, New York, and Grasslands Hospital, Valhalla, N. Y.

State Medical Meeting in Duluth.—The 101st annual meeting of the Minnesota State Medical Association will be held at the Duluth Armory, June 7 to 9, under the presidency of Dr. Justus Ohage, St. Paul. The sessions will open Monday at 9 a. m. with a panel discussion on the treatment of hypertension, for which Dr. Richard M. Shick, Rochester, will serve as moderator and the following physicians as collaborators: Arthur C. Corcoran, Cleveland, James H. Currens, Boston, Henry A. Schroeder, St. Louis, and Robert W. Hollenhorst, Rochester. There will be daily round-table luncheons at 12:15 p. m. On Monday Dr. Frederick J. Hofmeister, Milwaukee, will give a luncheon presentation, "Anesthesia as a Maternal Mortality Factor." At a Tuesday round-table Dr. Charles E. Galloway, Evanston, Ill., will discuss "Obstetric Hemorrhage as a Maternal Mortality Factor." The annual dinner of the state association will be held Tuesday at 7 p. m. in the ballroom of the Hotel Duluth. The Hon. David McKendree Key, Washington, D. C., assistant secretary of state for United Nations affairs, will have as his subject "A Fresh Look at the United Nations." Sports events that have been scheduled include a golf tournament, Sunday, at the Northland Country Club, skeet, trap, and pigeon shoots, and fishing.

MISSOURI

Two New University Departments.—The University of Missouri School of Medicine, Columbia, announces that a department of obstetrics and gynecology will be established July 1. The chairman will be Dr. Clarence D. Davis of Duke University School of Medicine, Durham, N. C., who has been appointed professor of obstetrics and gynecology. Dr. Davis was resident in endocrinology in the Duke Hospital before becoming an instructor in the school of medicine. In 1946 he was appointed clinical associate in physiology at the University of Washington School of Medicine, Seattle, and from 1948 to 1950 served as clinical associate in obstetrics and gynecology. In 1950 he was appointed associate in obstetrics and gynecology at Duke University and in 1952 assistant professor of obstetrics and gynecology. He is currently conducting studies on infertility and psychosomatic phases of gynecology.

On Sept. 1 a department of pediatrics will be opened by the University of Missouri School of Medicine, with Dr. Robert L. Jackson, presently professor of pediatrics at the State University of Iowa College of Medicine, Iowa City, as professor and chairman. After internship at the State University of Iowa hospital and an assistant residency at the University of Rochester, Dr. Jackson returned to Iowa, where he has served as instructor, associate, assistant and associate professor, and since 1951 as professor of pediatrics. He worked closely with the late Dr. Philip C. Jeans, chairman of the department of pediatrics. Dr. Jackson is currently a member of the Council of the American Diabetes Association and a member of the study section of the U. S. Public Health Service, Washington, D. C., relative to metabolism and nutrition.

NEW MEXICO

Lovelace Foundation Dedicates Radiation Center.—The new Radiation Therapy Center of the Lovelace Foundation and Clinic in Albuquerque was dedicated in a ceremony Jan. 6. The structure, which has been in use since November, consists of one story and a basement and contains a reception room, auditorium, kitchen, offices, laboratories for radioactive isotopes, and treatment rooms. Radiation therapy equipment includes radioactive cobalt for treatment of deep tumors, a conventional deep therapy unit, and very low voltage x-ray units. Use of radioactive isotopes other than cobalt for the diagnosis and treatment of disease is being expanded. The $85,000 cobalt unit was a gift of the late Ellis Hall of Albuquerque. The remainder of the more than $280,000 cost of the center was financed by contributions of more than 40 persons and companies located primarily in Albuquerque and New Mexico, but including contributors in eight other states. Dr. Jack W. Grossman is in charge of the center. At the dedication ceremony Dr. Edward J. McCormick, Toledo, Ohio, President of the American Medical Association, gave an address. Floyd B. Odlum, LL.B., New York, chairman of the board of trustees, outlined the foundation's program, and Dr. John C. Bugher, director, Division of Biology and Medicine, U. S. Atomic Energy Commission, described "Development and Uses of Cobalt 60 Teletherapy Unit in Cancer Treatment." Other participants in the program included Dr. Albert S. Lathrop, Santa Fe, president, New Mexico Medical Society, Dr. Theodor E. Kircher, Albuquerque, president, Bernalillo County Medical Society, Dr. Carl H. Gellenthien, Valmora, Vice-President, American Medical Association, and Dr. William R. Lovelace, Albuquerque. The ceremony was preceded by luncheon in the home of Dr. W. Randolph Lovelace II.

NEW YORK

Radioisotope Laboratory.—Dr. Robert R. Wadlund, who recently returned from Oak Ridge, Tenn., where he undertook special studies, is serving as director of the new radioisotope laboratory for the use of radioactive isotopes in the diagnosis and treatment of disease and in cancer research at Albany Hospital and Albany Medical College. Jointly supported by the college and the hospital, the new laboratory had an initial annual budget of $22,500, which included $2,500 contributed by the New York State division of the American Cancer Society.

Graduate Training in Anesthesiology.—The New York State Society of Anesthesiologists, in cooperation with the American Society of Anesthesiologists, offers free postgraduate training in anesthesiology to any physician in the state engaged in full-time or part-time practice of anesthesiology. Instruction, individualized and informal, covers fundamental aspects of clinical practice. Training will be given in or close to the applicant's own community on a flexible time schedule. Physicians may write to Dr. Edwin Emma, New York State Society of Anesthesiologists, 137 W. 11th St., New York 11.

Fellowship in Tuberculosis Research.—The New York Tuberculosis and Health Association announces that the James Alexander Miller fellowship for reseach in tuberculosis, with an annual stipend of $5,000, is available from July 1, 1955, to June 30, 1956, to a qualified medical investigator who will devote full time to a research project on tuberculosis. Assurance must be provided that the applicant will be acceptable in the laboratory or clinic of his choice; and that he will be provided with the facilities necessary for the pursuit of the work. Applications should be submitted in duplicate by Oct. 1. Forms may be obtained from the association's headquarters, 386 Fourth Ave., New York 16.

New York City

Dr. Russell Cecil Directs Arthritis Foundation.—Dr. Russell L. Cecil, emeritus professor of medicine at Cornell University Medical College and a consultant to New York Hospital and Bellevue Hospital Center, has been appointed medical director of the Arthritis and Rheumatism Foundation. Dr. Cecil is the editor of a "Textbook of Medicine," which is now in its eighth edition. He served as president of the American Rheumatism Association, 1937-1938, and president of the New York Rheumatism Association, 1942-1943.

Dr. Rusk Honored.—Dr. Howard A. Rusk, director, department of physical medicine and rehabilitation, New York University College of Medicine, recently received from the Save the Children Federation its annual award "in recognition of distinguished and devoted service in the field of health and welfare for children." The award was presented to Dr. Rusk by Mr. Leonard Mayo, director of the Association for Aid to Crippled Children, at the federation's annual meeting dinner in the United Nations Building. Dr. Rusk was cited also for his work as associate editor of the *New York Times* and his other writings, through which he "has been a potent force in creating enlightened programs of aid for underprivileged and handicapped children." The Save the Children Federation, a child service organization founded in 1932, with national headquarters at 345 E. 46th St., helps children both in the United States and overseas.

Personal.—Dr. Frederick S. Reiss, associate clinical professor of New York University College of Medicine, has returned from Mexico, where, as the guest of the Mexican Dermatological Association, he lectured on experimental mycology, systemic mycoses, and recent advances in dermatotherapy.——Dr. Bernard D. Davis, presently in charge of the U. S. Public Health Service Tuberculosis Research Laboratory at Cornell University Medical College, has been appointed chairman, department of pharmacology, College of Medicine of New York University-Bellevue Medical Center, effective July 1.——Dr. Paul F. deGara returned recently from a trip to Italy, where, on invitation of the "Accademia Medico-Fisica Fiorentina," he delivered a paper, entitled "Treatment of Allergies with ACTH and Cortisone," at the University of Florence.

Pilot Program for Care of Cancer Patients.—A pilot program providing financial aid and medical care for needy cancer patients in their own homes, initiated by the Bronx Hospital, Fulton Ave. and 169th St., will enable cancer patients to remain with their families instead of being transferred to nursing homes or specialized institutions. Financed by a grant of $7,500 from the Cancer Philanthropic League, 165 Broadway, the new service will be extended initially only to those persons who have been under the care of the Bronx Hospital. It will provide for continuous medical care, payment of medical, nursing, and housekeeping expenses as well as for costs incurred in transporting the patient to the hospital for periodic observation and treatment. According to Dr. Aaron A. Karan, director, the hospital will pay the patient's own physician a set fee for each visit, equaling the prevailing rate for home visits. If no family physician is available, the hospital will assign a member of its staff for visits to the patient's home and pay him similar compensation. In addition, the patient will make periodic visits to the hospital for examinations and treatments which cannot be administered in his home. Nurses will receive a fee for their services. The progress of the patient will be followed by a hospital social worker who will assist with home adjustments and, if necessary, arrange for shopping and other housekeeping duties.

NORTH CAROLINA

Medical Postgraduate Course.—Duke University, Durham, will offer its medical postgraduate course, June 14-17. Monday morning there will be discussions on diseases of the abdominal aorta, vascular disease in association with some metabolic disorders, and salt and water metabolism. There will be daily ward rounds or visits to the clinic at 2 p. m. At 7:30 p. m., Dr. Edward S. Orgain will lead a discussion on the management of coronary occlusion. Topics for Tuesday morning are "Observations on Arteritis and Hypertension," "Evaluation of the Newer Drugs in the Treatment of Hypertension," and "Recent Advances in Cardiovascular Surgery." At 7:30 p. m. there will be a discussion of medicolegal problems. Wednesday morning will be devoted to papers on acute toxemias of pregnancy, ophthalmologic manifestations of vascular disease, and psychiatric aspects of cardiovascular disease. At 6:30 p. m. a barbecue will be given at Turnage's by the faculty of the medical school. The following presentations are scheduled for Thursday morning: "Evaluation of the Newer Antibiotics," "The Mechanism of Pain in Peptic Ulcer," and "Problems of the Paraplegic."

NORTH DAKOTA

Hospitals Built with Hill-Burton Aid.—On Sept. 11, 1953, the director of the division of hospitals of the North Dakota State Department of Health at Bismarck wrote that the past six years had witnessed greater progress in new hospital construction and improvements in existing hospitals in North Dakota than any comparable period in the history of the state. The annual allotment of federal funds for hospital construction to North Dakota from 1948 to June 30, 1953, in the total amount of $1,830,986, it was said, had an important bearing on the addition of new facilities. Nevertheless the hospital construction and improvement financed entirely by local sources exceeded by more than four times that portion supported in part by federal grants under the Hill-Burton Act.

In terms of expenditures, both local and federal, it was estimated that since 1948 a total of 20 million dollars had been expended or obligated for general hospital construction and equipment. This estimate included remodeling and construction resulting in the addition of beds but would probably exclude many expenditures not linked to bed capacity changes. Of this amount $1,595,798.65 represented federal grants that have been expended or obligated for equipment only or construction and equipment of 16 new rural general hospitals (see table). The investment in these 16 hospitals, including both federal and local funds but excluding cost of land or hospital sites approximated $4,500,000. Besides the new general hospitals added, the first bona fide chronic disease hospital in the state, a 60-bed unit, was then under construction at Valley City at an estimated cost of $750,000, of which the federal government's share was about $230,000. The investment and expenditures of these funds, both local and federal, had resulted in the addition and placing in operation of about 1,000 new general hospital beds in 33 locations. Besides these additions an estimated 250 general hospital beds were being added on completion of construction then in progress.

Thus hospital service had been brought closer to more people and to areas heretofore long distances from adequate facilities. With few exceptions, chiefly in a limited number of sparsely populated areas, most of the state's population then had hospital service available within a distance of 25 miles or less. As of that date, the supply and distribution of general hospitals in North Dakota seemed reasonably adequate. This situation may change as the result of increased industrialization and rapid population shifts or increases. The future improvements of general hospitals in the state would seem to lie in remodeling, adding to, or replacing existing facilities, in which field much remains to be done. There was a rather serious lag in the provision of adequate chronic disease hospitals, public health centers, and mental hospital facilities. Even though these types of facilities may depend largely on public or tax support and the general hospitals have mainly represented financial support by private nonprofit associations, the same principles of cooperative action characterized in the progress in the general hospital field were said to be applicable to the other categories of hospital facilities.

The State Health Planning Committee and the State Health Department on Oct. 13, 1953, placed the State Hospital at Jamestown on the construction schedule to receive federal aid toward augmenting its patient receiving, treatment, and ward facilities. The federal allotment made available for the fiscal year ending June 30, 1954, amounted to $282,961, less a small contingency and reserve fund, and that was in addition to $800,000 appropriated for the construction of a ward building by the 1953 Legislature. The Hospital Survey and Construction Act (Hill-Burton) has been extended by an act of Congress to June 30, 1957, and North Dakota anticipates three more annual allotments on or about July 1 each year.

Fifty Year Club.—At the annual meeting in Grand Forks the North Dakota State Medical Association honored the following physicians as "50-Year Club" members: Jacob L. Devine Sr., Minot, Albert M. Fisher, Jamestown, Louis H. Kermott Sr., Minot, Olaf A. Knutson, Buxton, Louis H. Landry, Walhalla, and William H. Witherstine, Grand Forks. Drs. Devine and Knutson were also designated "honorary" members, having been licensed to practice medicine in North Dakota since 1904, as were Drs. Olaf Sand and Nils L. Tronnes, Fargo.

Construction Data for North Dakota Hospital Projects Receiving Federal Assistance
July 1, 1953

Project	Type	Ownership	No. of Beds	Costs			Floor Area (Sq. Ft.)	Total Cost per Sq. Ft.†
				Construction Contracts *	Total †	Federal Share		
Hettinger (pickup)	New	NPA	30	$239,363.45	$320,009.52	$ 98,776.84	19,400	$16.49
Elgin (pickup-equipment only)	New	NPA	30	112,535.00	145,084.20	10,049.73	9,362	15.50
Cooperstown	New	NPA	27	339,650.29	410,218.75	136,403.80	18,750	21.88
Watford City	New	NPA	18	203,445.65	249,158.71	83,027.20	10,900	22.86
Bowman	New	NPA	20	291,361.02	340,480.67	113,412.65	19,786	17.21
Garrison	New	NPA	40	382,294.55	465,386.14	151,308.97	25,442	18.29
Maddock	New	NPA	21	198,360.81	239,460.81	111,349.28	12,840	18.65
Lisbon	New	NPA	20	198,463.54	246,442.53	112,971.78	15,894	15.50
Ashley	New	NPA	14	216,617.43	257,340.29	119,663.23	9,825	26.19
Stanley (pickup)	New	NPA	21	228,867.40	301,949.26	132,969.78	12,096	24.96
Mohall (pickup-equipment only)	New	NPA	28	180,638.26	252,372.06	31,217.22	20,449	12.34
Wishek	New	City	16	212,679.61	253,413.96	116,488.99	12,284	20.63
Turtle Lake (pickup-equipment only)	New	NPA	14	98,826.47	134,866.52	12,727.93	9,026	14.94
Cavalier	New	NPA	22	241,462.31	290,462.31	133,612.66	12,500	23.24
Cando	New	NPA	20	386,398.00	457,073.00	210,253.58	18,928	24.15
Ellendale (pickup-equipment only)	New	City	20	186,824.79	228,579.71	21,565.01	14,180	16.12
Valley City (chronic diseases)	New	NPA	66	408,041.19	725,137.51	221,235.25	27,174	26.68
Total	....	.....	427	4,125,829.77	5,317,435.95	1,817,033.90		

* Includes construction contracts plus group 1 equipment.
† Includes construction contracts, architect's fees, group 1, 2, and 3 equipment, etc.

OREGON

University News.—Dr. Zolton T. Wirtschafter, chief of medicine at the Veterans Administration Hospital, Portland, has been named an assistant clinical professor at the University of Oregon Medical School, Portland.

Society News.—Under the presidency of Dr. Wesley R. Weissert, Pendleton, the Eastern Oregon District Medical Society will hold its annual session June 4 and 5 in Pendleton. The guest lecturers, Dr. Howard P. Lewis, Portland, professor of medicine, University of Oregon Medical School; Dr. Matthew McKirdie, Portland, associate clinical professor of surgery, University of Oregon Medical School; and Dr. Emile G. Holmstrom, Salt Lake City, professor of obstetrics and gynecology, University of Utah College of Medicine, will each present two lectures in the New Treatment Building at the Eastern Oregon State Hospital, Pendleton, and two luncheon panel discussions at the Pendleton Country Club. The annual social hour and banquet will be held Friday evening in the Green Room of the Pendleton Hotel.

PENNSYLVANIA

Course in Cardiology.—The Graduate School of Medicine of the University of Pennsylvania, Philadelphia, announces the inauguration of an eight month full-time basic course in cardiology to begin Sept. 28 under the direction of Dr. William D. Stroud. The course will provide a foundation for residency and other clinical training leading to qualifications for the practice of cardiology as a specialty. The initial course will be limited to 10 students, and preference will be given to candidates who either have qualified for certification by the American Board of Internal Medicine or are working towards such qualification. For information, inquiries should be addressed to the Dean, Graduate School of Medicine, 238 Medical Laboratories Building, University of Pennsylvania, Philadelphia.

Pittsburgh

Biophysical Research Laboratory.—A biophysical research laboratory for fundamental studies has been established at the Eye and Ear Hospital, University of Pittsburgh Medical Center, through the Eye Bank of Pittsburgh and the McClintic Endowment. A long-range research program is planned in the new laboratory to investigate the physics, chemistry, and biology of photosensitive structures.

SOUTH DAKOTA

New Medical and Science Building.—The new Andrew E. Lee Medical and Science Building was recently dedicated at the University of South Dakota School of Medical Sciences, Ver-

Andrew E. Lee Medical and Science Building.

million. The keynote address, "Challenges in Medical Education Today," was delivered during the morning ceremonies by Dr. Edward J. McCormick, Toledo, Ohio, President, American Medical Association.

TEXAS

Narcotic Violation.—Dr. Walter F. Hart, 107 Quitman St., Gladewater, pleaded guilty on Feb. 22 in the U. S. District Court of Texarkana to a charge of violating the federal narcotic law, and was sentenced to a term of three years. This sentence was suspended for five years.

University News.—Dr. Willard R. Cooke, professor of obstetrics and gynecology, University of Texas Medical Branch, Galveston, was recently honored by former residents who trained under him. They unveiled an oil portrait of Dr. Cooke that is to be placed in the facilities of the department in the new John Sealy Hospital building.

Society Honors Its Veteran Secretary.—At the annual dinner and installation of officers of the Dallas County Medical Society, Jan. 14, Dr. William W. Fowler, for 34 years secretary of the society, was presented with a bronze plaque inscribed "W. W. Fowler, 'Secretary Emeritus' 1954 for long and honorable service to the Dallas County Medical Society."

VERMONT

Rutland Emergency Plan.—The Rutland Hospital medical staff recently voted to set up a speedier system of handling emergency calls, which went into effect Feb. 1. A 24 hour telephone service will alert surgeons to automobile accident cases and physicians to regular medical emergency calls. The committee which worked out details of the plan included Drs. William W. Brislin, chairman, Thomas A. Keenan, and William J. Powers.

WASHINGTON

Society News.—At the annual meeting of the Washington State Society of Anesthesiologists the following officers were elected: Dr. James E. Mathwig, Seattle, president; Dr. David B. Wilsey, Spokane, vice-president; and Dr. Lloyd D. Bridenbaugh, Seattle, secretary-treasurer.

Community Health Problems. — The second annual Clinic on Community Health Problems was held in Yakima, March 23-24 under the sponsorship of the Washington State Health Council, an organization of 34 state-wide health groups, including the Washington State Medical Association. Dr. Lecil C. Miller, Wenatchee, chairman of WSMA Rural Health Committee, was vice-chairman of the clinic. A 32 page pamphlet summarizing recommendations made at last year's clinic is available free from the Washington State Health Council, 905 Second Ave., Seattle.

WEST VIRGINIA

Press-Radio Conference.—The fifth annual Press-Radio Conference was recently held under the auspices of the West Virginia State Medical Association at the Daniel Boone Hotel in Charleston. Dr. Russell Kessel, Charleston, president of the state medical association, delivered the address of welcome. Dr. Charles E. Staats, Charleston, chairman, state public relations committee, discussed "The Open Medical Forum Idea." Dr. Newman H. Dyer, Charleston, state director of health, considered "The Press-Radio and Public Health." Leo E. Brown, Chicago, Director, A. M. A. Department of Public Relations, gave the concluding address, "The Other Fellow," in which an exploration was made of present-day relations between the press, radio, and the medical profession. Earl Godwin, Washington, D. C., NBC correspondent, discussed "Lifting the Lid Off Washington" at the banquet.

WISCONSIN

Personal.—Dr. Woodruff Smith, who since 1924 has practiced in Ladysmith and who has served as a member of the Wisconsin State Board of Health, has accepted appointment as industrial physician with the Jones & Laughlin Steel Corporation, Pittsburgh.——Dr. Robert L. MacCornack, Whitehall, has been appointed to represent the American Medical Association at a meeting of the British Medical Society in Glasgow, Scotland, July 5 to 9. Dr. MacCornack, president, Whitehall Community Hospital Board, is a former speaker of the state society House of Delegates.

Antitoxin to Be Distributed from Police Stations.—The Milwaukee Health Department announces that culture outfits and diphtheria antitoxin will henceforth be distributed from police stations in Milwaukee rather than from the local drug stores and other culture stations previously utilized. Culture outfits may be returned to the health department's laboratory in the city hall or to the police stations.

Television and Teaching.—The dean of the University of Wisconsin Medical School, Madison, has named the following committee of physicians to investigate ways in which television can aid in improving the teaching functions of the school: Robert C. Parkin, H. Kent Tenney Jr., Herman W. Wirka, Edgar S. Gordon, and Henry A. Peters. Dr. Parkin, the chairman, announces that the committee will work closely with the State Medical Society of Wisconsin and the Dane County Medical Society. Program experimentation in a number of fields is under way in the university television laboratory, and kinescopic recordings are being made. WHA-TV, the educational station on the campus, is being set up.

GENERAL

Urologists Meeting in New York.—The 49th annual meeting of the American Urological Association will be held at the Waldorf-Astoria Hotel, New York, from May 31 to June 3. The presidential address, "The American Urological Association: Reflections on the Past, Present and Future" will be delivered by Dr. J. A. Campbell Colston, Baltimore, Wednesday, 2 p. m. All physicians, including visitors from foreign countries, are invited to the scientific sessions.

Fellowships in Basic Science.—The National Research Council announces that Eli Lilly and Company is offering postdoctoral fellowships in the medical sciences to American citizens, under 36, who have the degrees of M.D., Ph.D., or Sc.D., or their equivalent in training. Applicants must agree to devote themselves to research in the basic medical sciences. The fellowships are designed to offer opportunity for research in the preclinical sciences, and not to provide practical experience in the clinical field.

Cytology Council Invites Papers.—The Inter-Society Cytology Council, which will hold its second annual meeting in Boston, Nov. 12-13, invites the submission of material (three copies of the title and of an informative abstract of not more than 200 words) to Dr. John B. Graham, chairman of the program committee, 32 Fruit St., Boston, before July 15. Abstracts of all papers accepted will be published in the official program. Particular attention is suggested for the endometrium and lesions of the gastrointestinal and urinary tract. For information, contact Dr. Paul F. Fletcher, Secretary-Treasurer, Inter-Society Cytology Council, 634 N. Grand Blvd., St. Louis.

Death of Dr. Frailey.—Carson P. Frailey, Phar.D., a member of the American Drug Manufacturers Association executive committee, and former executive vice-president and secretary of the association, died March 13 at his home in Washington, D. C., aged 66. Dr. Frailey, who was graduated from the University of Maryland College of Pharmacy in 1908, received the honorary degree of doctor of science from the university in 1946 and an honorary doctor of laws from Southeastern University, Washington, D. C., in 1949. He served as chairman of the Drugs Resources Advisory Committee of the Army-Navy Munitions Board in World War II, was president of the National Drug Trade Conference for 23 years, and of the District of Columbia Y. M. C. A. for 9 years, and was a member of the board of trustees of the United States Pharmacopoeia.

Mid-Central States Orthopaedic Society.—This society, composed of orthopedic surgeons from Kansas, Missouri, Nebraska, Oklahoma, Colorado, and Arkansas, had its first general meeting at the University of Kansas Continuation Center and the Student Union Building at the Medical Center, Kansas City, Kan., April 9-10. The meeting was entirely clinical in nature and presented by members of the society living in the Greater Kansas City area. The 1954 officers, who also were in office for the 1953 organizational meeting, were Drs. James B. Weaver, Kansas City, Kan., president; Vilray P. Blair, St. Louis, vice-president; and Harry O. Anderson, Wichita, Kan., secretary-treasurer. Newly elected officers are Drs. Vilray P. Blair, St. Louis, president, and Elias Margo, Oklahoma City, vice-president. Dr. H. O. Anderson was reelected as secretary-treasurer.

Booklet on Artificial Respiration.—A new folder illustrating the Nielsen "back-pressure arm-lift" method of artifical respiration has been prepared by the Aetna Life Affiliated Companies. Entitled "A Life in Your Hands," the two color pamphlet is illustrated with photographs showing the proper method of administering the Nielsen technique, which has now been adopted by such organizations as the American Red Cross, the Armed Forces, the National Safety Council, and many other organizations. The folder can be used (1) as a teaching aid with first aid classes and civil defense groups and (2) in conjunction with the Aetna educational film "Seconds Count," an eight-minute movie also dealing with the new artificial respiration technique. The folder, which is being distributed as a public service, may be obtained from the company's public education department at Hartford, Conn.

Degrees Now Offered in Medical Journalism.—According to an announcement from the American Medical Writers' Association, the first four year collegiate courses in medical journalism and writing leading to a bachelor's degree will be inaugurated next September at the University of Illinois, Urbana, and the University of Missouri, Columbia. Several partial scholarships ($500 each), sponsored by the American Medical Writers' Association, will be available. Dr. Harold Swanberg, Quincy, Ill., secretary of the association, has initiated the fund with a $1,000 contribution to establish one scholarship at each of the schools. Checks for the fund should be made payable to the association and marked for the Medical Journalism Scholarship Fund. Descriptive literature concerning the academic courses may be obtained from Earl F. English, Ph.D., dean, School of Journalism, University of Missouri, Columbia, and Mr. I. W. Cole, School of Journalism and Communications, University of Illinois, Urbana.

Annual Louis H. Bauer Lecture.—At its 25th annual meeting the Aero Medical Association paid tribute to its founder, first president, and guest speaker for the occasion, Dr. Louis H. Bauer of Hempstead, N. Y., by announcing the establishment of an invitational guest lecture series to bear his name and to be presented at each annual meeting by an authority in the field of aeronautics or the biological sciences. Dr. Bauer is also a past president of the American Medical Association and secretary-general of the World Medical Association. Other members honored at this meeting were Dr. William R. Stovall, Washington, D. C., who received the Theodore C. Lyster award; John C. Flanagan, Ph.D., Pittsburgh, who received the Raymond F. Longacre award; and John P. Marbarger, Ph.D., Chicago, who received the Arnold D. Tuttle memorial award. Brig. Gen. Otis O. Benson Jr., U. S. A. F., was installed as president of the association. The next annual meeting will be in Washington, D. C.

Dr. Crosby Named Executive Director of A. H. A.—Dr. Edwin L. Crosby, Chicago, formerly director of the Joint Commission on the Accreditation of Hospitals, has been appointed executive director of the American Hospital Association to succeed Mr. George Bugbee, who resigned to become president of the Health Information Foundation in New York (THE JOURNAL, March 27, page 1100). Dr. Crosby, who became affiliated with Johns Hopkins Hospital in Baltimore as a statistician in 1937, served as director from April 1, 1946, to July 1, 1952, when he accepted his post with the newly organized joint accreditation commission. Last October, Former President Herbert Hoover appointed him research director and a member of the medical task force of the second Hoover Commission on organization of the executive branch of the government. He is a member of the Health Resources Advisory Committee, the U. S. National Committee on Vital and Health Statistics, and a consultant to the Surgeon General of the Army, Surgeon General of the Public Health Service, and to the Veterans Administration. He is the immediate past president of the American Hospital Association.

CARE Appeals for Funds.—An appeal is being made by CARE (Cooperative for American Remittances to Everywhere, Inc.) in connection with its hospital equipment program for South East Asia. Although previous appeals have brought a generous response in equipment, supplies, and drugs, money is needed to defray the costs of packing, shipping, and internal delivery.

About three years ago, World Health Organization-United Nations certified the primary need of hospital equipment, supplies, and drugs for 189 hospitals in India, Burma, the Philippines, Ceylon, Indonesia, Thailand, and Hong Kong. In May, 1953, CARE decided to try to secure this material mainly through the medical and health organizations of the United States. The Board of Trustees of the American Medical Association voted approval of the general proposition on May 29, 1953, and the woman's auxiliary to the American Medical Association subsequently adopted a resolution approving the proposition. At a meeting of leaders in the medical and health organizations in New York, Sept. 15, 1953, Dr. Charles F. Wilinsky, Boston, a past president of the American Hospital Association, accepted the chairmanship of the effort and was named chairman of the steering committee. This committee,

after examination and recheck of specific hospital needs, has announced an urgent need for medical equipment and supplies, drugs and pharmaceuticals, and cotton textiles and blankets. The Hospital Industries Association is canvassing its membership for contributions to CARE of needed items. Contributions of material by manufacturers to CARE relieves needed storage space. The American Hospital Association is asking its membership for contributions of used but serviceable equipment. The American Drug Association will canvass the drug industry for pharmaceuticals. Blankets and cotton sheeting of various specifications will, however, probably not be available in the form of direct contributions and will have to be purchased and shipped by CARE. To meet such expenditures, CARE is appealing to the medical profession for funds as well as supplies. Donations for this purpose should be marked "CARE for medical aid" and forwarded to CARE, 660 First Avenue, New York 16.

CANADA

Canadian Medical Association Meeting.—The annual meeting of the Canadian Medical Association will be held in Vancouver, British Columbia, June 14 to 18. The general session will open Wednesday at 2 p. m. with an address by the president, Dr. Charles W. Burns, Winnipeg. Clinical programs in color television will be exhibited Monday and Tuesday all day and Wednesday in the morning. Wednesday afternoon round-table conferences will be held on rehabilitation, use of corticotropin (ACTH) and cortisone in pediatrics, and lesions of the breast. A clinical pathological conference is scheduled for Wednesday afternoon. The general session Thursday will open at 2 p. m. Round-table conferences will be held on new drugs, communicable diseases, and pregnancy and its relation to various systemic diseases. The clinical pathological conference will be concerned with micrococcic (staphylococcic) pneumonia and empyema in infancy. Round-table conferences following the Friday general session will be concerned with allergic disease, the treatment of common skin disorders, and gallbladder disease.

LATIN AMERICA

Pediatric Congresses.—Three pediatric congresses, originally scheduled for July 15 to 21 in São Paulo, Brazil, will be held Aug. 1 to 7. The Pan American Congress of Pediatrics will consider diseases caused by neuroviruses, encephalic complications of infectious diseases, endemic goiter, and malnutrition. This congress will hold round-table discussions on diagnosis of the acute abdomen, medical management of childhood tuberculosis, surgical problems in infancy, and psychological orientation clinics and will present symposiums on the use of antibiotics and on asthma in childhood. Among the topics to be considered by the South American Congress of Pediatrics are factors responsible for the low median weight-height index (physical growth) of American children, cirrhosis of the liver, and childhood mortality in South America. The Brazilian Pediatric Society will consider childhood mortality.

FOREIGN

British Medical Association.—The annual meeting of the British Medical Association will be held in Glasgow, July 1 to 9. The following plenary sessions have been scheduled: Tuesday, 9:30 a. m., "The Problem of Sleep"; Wednesday, 3 p. m., "Food and Disease"; and Thursday, 9:15 a. m., "The Problem of Pulmonary Tuberculosis Today." The section of ophthalmology will have a combined session with the section of occupational health, during which the employment of the visually handicapped will be discussed. The section on orthopedics has scheduled a symposium on poliomyelitis for Friday, and the same subject will be discussed during the joint session of the sections of preventive medicine and infectious diseases and of microbiology and pathology. Excursions, entertainment features, and sports events have been planned.

Study Tours to Europe.—The German Educational Travel Association, "a nonprofit organization for the promotion of commercial and cultural relations between Germany and other countries," has arranged the following study and sight-seeing tours to Europe for the medical profession, in connection with four international congresses: tour 1, study tour for gynecologists, July 10 to 26, ending at Geneva, Switzerland, where the International Congress on Gynecology and Obstetrics will convene, July 26 to 31; tour 2, Aug. 15 to 30, study tour combined with International Poliomyelitis Congress, Rome, Sept. 6 to 10; tour 3, Aug. 16 to 30, ending in Berne, Switzerland, where the International Congress of Orthopedic Surgery and Traumatology will be held from Aug. 30 to Sept. 3; and tour 4, Sept. 11 to 26, ending in Madrid, Spain, where the International Union Against Tuberculosis will hold its conference from Sept. 26 to Oct. 2. Information may be obtained from the German Educational Travel Association. The Barbizon Plaza, 106 Central Park South, New York 19.

Medical Seminars in Vienna.—The American Medical Society of Vienna will hold a series of seminar congresses in the University Clinics (Allgemeines Krankenhaus) throughout 1954 in celebration of the 50th anniversary of the society. All seminars are scheduled from 3 to 6 p. m. The program in internal medicine is as follows:

June 9-11, Cardiology, Electrocardiography, Vectocardiography, Ballistocardiography.
July 1-3, Diabetes, Liver and Biliary Tract Diseases, Hypertension and Nephritis.
Aug. 4-6, Endocrinology, Metabolism, Fluid and Electrolyte Balance.
Sept. 1-3, Gastroscopy, Gastroenterology, Proctology.
Oct. 6-8, Hematology, Normal Peripheral Blood and Bone Marrow, Diseases of Blood and Blood-Forming Organs.
Nov. 10-12, Diseases of the Chest, Tuberculosis, Malignant Diseases.

Seminars in dermatology and syphilology will include:

July 5-7, Superficial Mycoses, Deep Mycoses, and Demonstrations; Sept. 6-8, Burns, Dermatology, and Demonstrations; Nov. 2-4, Syphilology, Allergic Skin Diseases, and Demonstrations.

The following seminars in neurology and psychiatry have been scheduled:

July 12-14, Neurology, Neuropathology, Electroencephalography, and Electromyography; Sept. 13-15, Psychoanalysis, Psychotherapy, and Psychiatry; and Oct. 11-13, Child Psychiatry, Marital Problems, and Behavior and Brain Function.

For details address: American Medical Society, Universitätsstrasse 11, Vienna, Austria.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.
1954 Annual Meeting, San Francisco, June 21-25.
1954 Clinical Meeting, Miami, Florida, Nov. 29-Dec. 2.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.

AMERICAN ACADEMY OF TUBERCULOSIS PHYSICIANS, San Francisco, June 19. Dr. Oscar S. Levin, P. O. Box 7011, Denver 6, Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Fairmont Hotel, San Francisco, June 17-20. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Executive Director.

AMERICAN DIABETES ASSOCIATION, Fairmont Hotel, San Francisco, June 19-20. Dr. John A. Reed, 1 East 45th St., New York 17, Secretary.

AMERICAN ELECTROENCEPHALOGRAPHIC SOCIETY, Hotel Claridge, Atlantic City, N. J., June 11-13. Dr. W. T. Liberson, Veterans Administration Hospital, Northampton, Mass., Secretary.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION, San Francisco, June 18-19. Dr. H. Marvin Pollard, University Hospital, Ann Arbor, Mich., Secretary.

AMERICAN GASTROSCOPIC SOCIETY, Mark Hopkins Hotel, San Francisco, June 20. Dr. John Tilden Howard, 12 East Eager St., Baltimore 2, Secretary.

AMERICAN GERIATRICS SOCIETY, Hotel Fairmont, San Francisco, June 17-19. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, St. Francis Hotel, San Francisco, June 18-20. Dr. Charna G. Perry, 691 Bridgeway Blvd., Sausalito, Calif., Secretary.

AMERICAN NEUROLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, N. J., June 14-16. Dr. H. Houston Merritt, 710 West 168th St., New York 32, Secretary.

AMERICAN OPHTHALMOLOGICAL SOCIETY, Many Glacier Hotel, Glacier Park, Mont., June 16-18. Dr. Maynard C. Wheeler, 30 West 59th St., New York 19, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, Mount Washington Hotel, Bretton Woods, N. H., June 6-9. Dr. George C. Eaton, 4 East Madison St., Baltimore 2, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Hotel Statler, Los Angeles, June 2-5. Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y., Secretary.

AMERICAN RHEUMATISM ASSOCIATION, St. Francis Hotel, San Francisco, June 18-19. Dr. William H. Kammerer, 33 East 61st Street, New York 21, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, St. Francis Hotel, San Francisco, June 18-20. Dr. Herbert H. Thomas, 920 South 19th St., Birmingham, Ala., Secretary.

AMERICAN UROLOGICAL ASSOCIATION, The Waldorf-Astoria, May 31-June 3. Dr. Charles deT. Shivers, 121 South Illinois Ave., Atlantic City, N. J., Secretary.

CONFERENCE OF PRESIDENTS AND OTHER OFFICERS OF STATE MEDICAL ASSOCIATIONS, The Palace, San Francisco, June 20. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, D. C., Secretary.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 13-16. Dr. Robert S. McKean, 364 Sonna Bldg., Boise, Secretary.

MAINE MEDICAL ASSOCIATION, The Samoset, Rockland, June 13-15. Mr. W. Mayo Payson, 142 High St., Portland 3, Executive Secretary.

MEDICAL LIBRARY ASSOCIATION, Statler Hotel, Washington, D. C., June 15-18. Miss Audrey L. Kargus, St. Louis Medical Society, 3839 Lindell Blvd., St. Louis 8, Secretary.

MEDICAL SURGICAL CONFERENCE, Meadow Lark Country Club, Great Falls, Mont., June 14-15. Dr. John A. Layne, Box 911, Great Falls, Mont., Chairman.

MINNESOTA STATE MEDICAL ASSOCIATION, Hotel Duluth, Duluth, June 7-9. Dr. B. B. Souster, 496 Lowry Medical Arts Bldg., St. Paul 2, Secretary.

NEUROSURGICAL SOCIETY OF AMERICA, Grand Hotel, Mackinac Island, Mich., July 21-24. Dr. Lester A. Mount, 700 West 168th St., New York 32, Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:
NORTHERN CALIFORNIA AND NEVADA, San Francisco, June 16. Dr. Stacy R. Mettier, University of California Hospital, San Francisco 22, Governor.

SOCIETY OF BIOLOGICAL PSYCHIATRY, Claridge Hotel, Atlantic City, N. J., June 13. Dr. George N. Thompson, 2010 Wilshire Blvd., Los Angeles 5, Secretary.

SOCIETY FOR INVESTIGATIVE DERMATOLOGY, Clift Hotel, San Francisco, June 19-20. Dr. Herman Beerman, 255 South 17th St., Philadelphia 3, Secretary.

SOCIETY FOR VASCULAR SURGERY, Mark Hopkins Hotel, San Francisco, June 20. Dr. George D. Lilly, 333 Ingraham Bldg., Miami 32, Fla., Secretary.

THE ENDOCRINE SOCIETY, Sir Francis Drake Hotel, San Francisco, June 17-19. Dr. Henry H. Turner, 1200 North Walker St., Oklahoma City 3, Secretary.

WYOMING STATE MEDICAL SOCIETY, Kalif Temple, Sheridan, June 7-9. Dr. Royce D. Tebbet, Box 1252, Cheyenne, Secretary.

FOREIGN AND INTERNATIONAL

BRITISH MEDICAL ASSOCIATION, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ontario, Canada, General Secretary.

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Geneva, Switzerland, June 5-6, 1954. Professor A. Montandon, Clinique Universitarie d O.R.L., Hôpital Cantonal, Geneva, Switzerland, Chairman.

CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY, Vichy and Paris, France, Sept. 26, 1954. For information write: Dr. Giulio Ammirandoli, Via Della Torretta 11, Montecatini Terme, Italy.

EUROPEAN SOCIETY OF CARDIOVASCULAR SURGERY, Edinburgh, Scotland, July 9-10, 1954. For information address: Mr. A. J. Slessor, Department of Surgery, University New Building, Edinburgh 8, Scotland.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29, 1955. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary General.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Universidad Mayor de San Marcos de Lima, Lima, Peru, S. A., Jan. 11-14, 1955. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Ambassador Hotel, Los Angeles, Calif., U. S. A., Oct. 10-14, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S.W., Rochester, Minn., U. S. A.

INTERNATIONAL CANCER CONGRESS, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Mo., U. S. A., Chairman, Committee on Arrangements.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

INTERNATIONAL CONGRESS ON GROUP PSYCHOTHERAPY, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

INTERNATIONAL CONGRESS ON GYNECOLOGY AND OBSTETRICS, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF HEMATOLOGY, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6e, France, Secretary.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Madrid, Spain, Oct. 5-8, 1954. Dr. Jesus Calvo Melendro, Hospital Provincial, Sorea, Spain, Secretary General.

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF NUTRITION, Amsterdam, Netherlands, Sept. 13-17, 1954. Dr. M van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands, General Secretary.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Berne, Switzerland, Aug 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL INSTITUTE ON CHILD PSYCHIATRY, Toronto, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N. Y., U. S. A., Executive Officer.

INTERNATIONAL POLIOMYELITIS CONGRESS, University of Rome, Orthopedic Clinic, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

INTERNATIONAL SOCIETY OF ANGIOLOGY, North American Chapter, Hotel Mark Hopkins, San Francisco, Calif., U. S. A., June 19, 1954. Dr. Henry Haimovici, 105 East 90th St., New York, N. Y., U. S. A., Secretary.

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12e, France.

INTERNATIONAL SOCIETY FOR CELL BIOLOGY, Leiden, Netherlands, Sept. 1-7, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basel, Switzerland, Secretary-General.

IRISH MEDICAL ASSOCIATION, Killarney, Ireland, July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5, 1955. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary General.

LATIN AMERICAN CONGRESS ON GYNECOLOGY AND OBSTETRICS, Sao Paulo, Brazil, July 10-15, 1954. Prof. Dr. Jairo Ramos, av. Brigaderio Luiz Antonio, 278-8° andar, Sao Paulo, Brazil, Chairman of Organizing Committee of Medical Congresses.

LATIN AMERICAN CONGRESS ON MENTAL HEALTH, Sao Paulo, Brazil, July 17-22. For information address: Professor A. C. Pacheco e Silva, Avenida Brigadeiro Luiz Antonio 651, Sao Paulo, Brazil.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION CONGRESS, Lake Garda, Italy, Sept. 15-21, 1954. Dr. Ada Chree Reid, 118 Riverside Drive, New York 24, N. Y., U. S. A., President.

PAN AMERICAN CONGRESS OF GASTROENTEROLOGY, Sao Paulo, Brazil, July 19-24, 1954. For information address: Dr. Jairo Ramos, Avenida Brigadeiro Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY (Interim), Sao Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, Consolacao 1151, Sao Paulo, Brazil, President.

PAN AMERICAN CONGRESS OF PEDIATRICS, Sao Paulo, Brazil, Aug. 1-7, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS, Hotel Gloria, Rio de Janeiro, Brazil, S. A., Oct. 2-13, 1954. Dr. Paul S. Schantz, 103 West Main St., Ephrata, Pa., U. S. A., Executive Secretary.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

SOUTH AMERICAN CONGRESS OF ANGIOLOGY, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., U. S. A., Sept. 12-18, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Held in approved medical schools where there are five or more candidates. Dates: June 22-23; Sept. 7-8 (Part I only). Candidates may file examinations at any time but the National Board must receive them at least six weeks before the date of the examination they wish to take. New candidates should apply by formal registration; registered candidates should notify the board by letter. Sec., Dr. John P. Hubbard, 133 S. 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

ARKANSAS:* *Examination.* Little Rock, June 10-11. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 11-12. Sec., Dr. O. L. Atkinson, 2528 Central Ave., Hot Springs National Park.

CALIFORNIA: *Written.* San Francisco, June 21-24; San Diego, Aug. 23-26; Sacramento, Oct. 18-21. *Oral.* San Francisco, June 19; San Diego, Aug. 21; Los Angeles, Nov. 20. *Oral and Clinical Examination for Foreign Medical School Graduates.* Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

COLORADO:* *Examination.* Denver, June 8-9. Final date for filing applications is May 8. *Reciprocity.* Denver, April 13. Final date for filing applications was March 13. Exec. Sec., Mrs. Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* Hartford, July 13-14. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, July 13-14. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 13-15. *Reciprocity.* Dover, July 22. Sec., Dr. J. S. McDaniel, 229 South State St., Dover.

FLORIDA:* *Examination.* Jacksonville, June 27-29. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami.

GEORGIA: *Examination and Reciprocity.* Atlanta and Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana.

HAWAII: *Examination.* Honolulu, July 12-15. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: *Examination and Endorsement.* Boise, July 12-14. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, June 22-24, and Oct. 5-7. Supt. of Registration, Mr. Frederic B. Selcke, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 16-18. Exec. Sec., Miss Ruth V. Kirk, 538 K of P Bldg., Indianapolis.

IOWA:* *Examination.* Iowa City, June 14-16. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: *Examination and Reciprocity.* Kansas City, June 9-10. Sec., Dr. O. W. Davidson, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 7-9. Address Mr. Raymond F. Nixon, Assistant Secretary, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination.* New Orleans, June 3-5. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

MAINE: *Examination and Endorsement.* Augusta, July 13-14. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 15-18. Sec., Dr. E. H. Kloman, 1215 Cathedral St., Baltimore 1.

MASSACHUSETTS: *Examination.* Boston, July 13-16. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston.

MICHIGAN:* *Examination.* Detroit and Ann Arbor, June 1954. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson 113.

MISSOURI: *Examination.* St. Louis, June 7-8. Ex. Sec., Mr. John A. Hailey, P. O. Box 4, State Capitol Building, Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA:* *Examination and Endorsement.* Reno, July 6. Sec., Dr. George H. Ross, 112 North Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination,* Trenton, June 15-18. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: *Examination.* Albany, New York, Syracuse and Buffalo, June 29-July 2. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Examination.* Raleigh, June 21-24. *Endorsement.* Pinehurst, May 3; Raleigh, June 22. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 7-9. *Reciprocity.* Grand Forks, July 10. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 14-16. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 9-10. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, July 8-9. *Reciprocity.* Portland, July 9-10. Ex. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 13-15. Acting Sec., Mrs. Margaret G. Steiner, Box 911, Harrisburg.

SOUTH DAKOTA:* *Examination.* Vermillion, July 20-21. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS: *Examination and Reciprocity.* Fort Worth, June 21-23. Rec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth 2.

UTAH: *Examination.* Salt Lake City, July 7-9. Final date for filing application is June 15. *Reciprocity.* Salt Lake City, June 15. Director, Mr. Frank E. Lees, Department of Business Regulation, 314 State Capitol, Salt Lake City.

VERMONT: *Examination.* Burlington, June 16-18. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination and Reciprocity.* Richmond, June 16. Address: Virginia Board of Medical Examiners, 631 First St., S.W., Roanoke.

WASHINGTON: *Examination.* Seattle, July 12-14. *Reciprocity.* Seattle, July 11. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

WYOMING: *Examination.* Cheyenne, June 14. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

HAWAII. *Examination.* Honolulu, July 12-15. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

PUERTO RICO: *Examination.* San Juan, Sept. 7-11. Sec., Dr. Joaquin Mercado Cruz, Box 9156, Santurce.

VIRGIN ISLANDS: *Examination.* St. Thomas, June 9-10. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, June 15. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

CONNECTICUT: *Examination.* New Haven, June 12. Address: State Board of Healing Arts, 258 Bradley St., New Haven 10.

FLORIDA: *Examination.* Gainesville, June. Sec., Mr. M. W. Emmel, University of Florida, Box 340, Gainesville.

MINNESOTA: *Examination.* June 2-3. Sec., Dr. Raymond H. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEW MEXICO: *Examination.* Santa Fe, July 18. Sec., Mrs. Marguerite Cantrell, P. O. Box 1522, Santa Fe.

OREGON: *Examination.* Portland, June 5, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

SOUTH DAKOTA: *Examination.* June 11-12. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WASHINGTON: *Examination.* Seattle, July 7-8. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

WISCONSIN: *Examination.* Milwaukee, June 5 and Madison, Sept. 24. Dr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

DEATHS

Hanson, Henry ⊕ Jacksonville, Fla.; born in Glenwood Township, S. D., July 4, 1877; Johns Hopkins University School of Medicine, Baltimore, 1908; assistant instructor in chemistry at the University of South Dakota, Vermillion, from 1901 to 1904; associate professor of pathology at the Milwaukee Medical College, 1908-1909; assistant superintendent and pathologist at Milwaukee County Hospital, 1908-1910; director of the Florida State Board of Health bacteriological laboratories from 1909 to 1916, when he engaged in private laboratory work until 1917; served as a captain and later major in the U. S. Army Medical Corps from 1917 to 1919; chief sanitary inspector for the Panama Canal Zone, 1918-1919, when he became assistant chief health officer for the Panama Canal Health Department; later director of yellow fever control for the National Health Department in Peru; member of the special field staff, Rockefeller Foundation from 1923 to 1927; field medical officer, Florida State Board of Health, with headquarters in De Funiak Springs, 1928-1929; state health officer of Florida from 1929 to 1936 and again appointed in 1942, retiring in 1945; on Jan. 23, 1936, became traveling representative for the Pan American Sanitary Bureau; since Feb. 1, 1936, acting assistant surgeon for the U. S. Public Health Service; technical adviser to Ministry of Health, Bolivia and Paraguay; twice decorated by the Cuban government for meritorious service in public health; received a medal from the government of Paraguay; past president of the Medical Association of the Isthmian Canal Zone, Florida State Public Health Association, and the Duval County Medical Society; member of the American Public Health Association, American Society of Tropical Medicine, American Academy of Tropical Medicine, National Malaria Committee, American Society for Parasitologists, and the Florida Health, Welfare and Education Council; died Feb. 13, aged 76, of bronchopneumonia.

Lucke, Balduin, Philadelphia; born in Hesse, Germany, Nov. 3, 1889; Medico-Chirurgical College of Philadelphia, 1912; professor and since 1947 chairman of the department of pathology at the University of Pennsylvania School of Medicine, where he was assistant instructor in pathology from 1914 to 1919, instructor, 1919-1920, assistant professor from 1920 to 1927, and associate professor from 1927 to 1932, when he became professor; professor of pathology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; Guiteras lecturer in 1940, Gross lecturer in 1944, and in 1945 delivered the 10th Christian Fenger lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society; specialist certified by the American Board of Pathology; member, past president and vice-president of the American Society for Experimental Pathology; member of the Association of American Physicians, American Association of Pathologists and Bacteriologists, and the Society for Experimental Biology and Medicine; past president of the Philadelphia Pathological Society and the Philadelphia Physiological Society; since 1943 member of the division of medical sciences, National Research Council; served during World War I; lieutenant colonel from 1942 to 1946, in which year he became a colonel, and was awarded the Legion of Merit for outstanding services as deputy director, Army Medical Museum, and as deputy and acting director, Army Institute of Pathology; visiting pathologist, Philadelphia General Hospital; in 1916 received the degree of doctor of public health from the University of Pennsylvania; on the editorial advisory board of *Cancer Research;* formerly editor of the neoplasm section of "Biological Abstracts"; died April 26, aged 64, of coronary artery disease and ventricular fibrillation.

Hardy, Le Grand Haven, New York City; born in Provo, Utah, June 13, 1894; Columbia University College of Physicians and Surgeons, New York, 1921; clinical professor of ophthalmology at his alma mater; specialist certified by the American Board of Ophthalmology; served as president of the American Orthoptic Council; member of the New York Ophthalmologic Society, the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, American Association for the Advancement of Science, and the Association for Research in Ophthalmology; fellow of the American College of Surgeons; director of the functional testing and physiologic optics laboratories, Institute of Ophthalmology, Presbyterian Hospital, where he was attending ophthalmologist; attending ophthalmologist at Vanderbilt Clinic; ophthalmologist at Northern Dispensary from 1924 to 1929, when he became consultant; assistant surgeon, New York Eye and Ear Infirmary, from 1924 to 1930; ophthalmic surgeon at Midtown Hospital from 1925 to 1929; director of ophthalmology at Fifth Avenue Hospital from 1929 to 1936; died in the Harkness Pavilion, Presbyterian-Columbia Medical Center April 14, aged 59.

Sweeney, Alvin Randolph ⊕ Chevy Chase, Md.; born in Lake Charles, La., Sept. 2, 1881; Jefferson Medical College of Philadelphia, 1908; commissioned in the U. S. Public Health Service as assistant surgeon in 1913 and retired as a medical director after almost 33 years of service; in charge of many quarantine stations and hospitals and during World War I in charge of public health programs relating to cantonment areas in the South; assigned to Marine hospitals at St. Louis and Ellis Island, and was head of the Marine Hospital in Cleveland and medical officer for the Ninth Naval District; formerly a special lecturer at the Harvard School of Public Health in Boston; fellow of the American College of Physicians; member of the Association of Military Surgeons of the United States, American Academy of Political and Social Science, and the American Public Health Association; superintendent of the Gallinger Municipal Hospital in Washington, D. C., from 1945 to 1949; died in the U. S. Marine Hospital, Baltimore, April 17, aged 72, of ruptured aneurysm of the abdominal aorta.

Brown, Clayton Milo ⊕ Buffalo; born in 1871; University of Buffalo School of Medicine, 1896; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Otolaryngology; professor of rhinolaryngology emeritus at his alma mater; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; consultant, Millard Fillmore Hospital, Children's Hospital, and the Buffalo General Hospital, where he died March 19, aged 82, of progressive bulbar palsy.

Alton, Jacob F., Bay City, Mich,; Michigan College of Medicine and Surgery, Detroit, 1895; died Feb. 15, aged 86, of cardiovascular renal disease.

Annis, Reginald Francis ⊕ Major, U. S. Army, retired, Brooklyn, Miss.; University of Nashville (Tenn.) Medical Department, 1909; served during World War I; entered the regular army as a captain Sept. 18, 1920; retired Aug. 27, 1929; died in the Veterans Administration Center, Biloxi, March 17, aged 75, of cerebral thrombosis and hypertensive heart disease.

Bailey, Carl Clark ⊕ Detroit; University of Michigan Medical School, Ann Arbor, 1923; served during World War II; affiliated with Mount Carmel Hospital, Crittenton Hospital and Providence Hospital, where he died Feb. 9, aged 55, of acute myocardial infarction and coronary arteriosclerosis.

Berry, Charles Richard ⊕ Houston, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1912; fellow of the American College of Surgeons; served on the staffs of the Park View Hospital and the Methodist Hospital, where he died March 7, aged 70, of coronary occlusion.

Boggs, Luther Watkins ⊕ Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1915; fellow of the American College of Surgeons; served during World War I; affiliated with Greenville General and St. Francis hospitals; died March 14, aged 61, of a heart attack.

⊕ Indicates Member of the American Medical Association.

Bryan, Kathryn May Ellis ✠ Madison, N. J.; Hering Medical College, Chicago, 1904; member of the Connecticut State Medical Society; at one time on the staff of Norwich (Conn.) State Hospital; died in Overlook Hospital, Summit, March 15, aged 80, of coronary occlusion.

Bryce, James R., Indiahoma, Okla.; Memphis (Tenn.) Hospital Medical College, 1904; died in Lawton March 11, aged 81, of arteriosclerotic heart disease.

Bullen, Clifford, Oak Park, Ill.; Bennett Medical College, Chicago, 1907; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; died April 6, aged 74, of chronic myocarditis and arteriosclerotic heart disease.

Burr, Ruth, Boston; University of California Medical School, San Francisco, 1920; member of the American Psychoanalytic Association; died Dec. 14, aged 62.

Byrne, John Francis, St. Paul, Minn.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1910; died in Veterans Administration Hospital, Fort Snelling, Jan. 30, aged 71, of cor pulmonale and pulmonary emphysema.

Cochems, Frank Nicholas ✠ Denver; Northwestern University Medical School, Chicago, 1891; died Dec. 31, aged 85, of coronary thrombosis and uremia.

Conroy, Joseph Edwin ✠ Coral Gables, Fla.; Fordham University School of Medicine, New York, 1918; member of the Medical Society of the State of New York; served during World War I; for many years practiced in New York City, where he was affiliated with Fordham Hospital, St. Elizabeth Hospital, and St. Clare's Hospital, where he died March 23, aged 60.

Courtright, Leo Ray ✠ Dayton, Ohio; Starling-Ohio Medical College, Columbus, 1909; served during World War I; for many years district physician; died in the Good Samaritan Hospital March 20, aged 67, of heart disease.

Deneen, Frank ✠ Bloomington, Ill.; Northwestern University Medical School, Chicago, 1915; member of the Endocrine Society; formerly vice-president of the Illinois Heart Association; affiliated with St. Joseph's Hospital and Mennonite Hospital, where he died April 12, aged 63, of acute myocardial infarction and coronary occlusion.

Feild, Julian ✠ Enid, Okla.; Jefferson Medical College of Philadelphia, 1907; fellow of the American Academy of Pediatrics; past president of the Garfield County Medical Society and the Oklahoma Pediatric Society; affiliated with St. Mary's Hospital and Enid General Hospital, where he died March 16, aged 70, of acute pulmonary edema.

Fisher, Henry Jacob Jr., North Bergen, N. J.; Columbia University College of Physicians and Surgeons, New York, 1920; school physician from 1927 to 1940; died March 14, aged 58, of carcinoma of the intestine.

Gannon, George Patrick ✠ Surgeon, U. S. Public Health Service (Reserve), retired, Pittsburgh; University of Pittsburgh School of Medicine, 1934; one of the city's school physicians; in 1941 director of the syphilis control program, Pittsburgh Department of Public Health; while with the U. S. Public Health Service, served as state venereal disease officer; stationed at Denver, Colo.; later stationed at the Marine Hospital in Pittsburgh; retired May 1, 1949; died in the Presbyterian Hospital March 9, aged 48, of ruptured aortic aneurysm and arteriosclerosis.

Griffiths, David Gurney, Long Beach, Calif.; University of Nebraska College of Medicine, Omaha, 1902; retired superintendent of the Lincoln (Neb.) State Hospital; died in St. Mary's Hospital April 6, aged 78, of coronary thrombosis.

Gurin, Adolph Abraham, Philadelphia; Universität Basel Medizinische Fakultät, Switzerland, 1897; died March 18, aged 83, of a heart attack.

Hoag, Howard Carlisle ✠ Waukegan, Ill.; Loyola University School of Medicine, Chicago, 1918; past president of the Lake County Medical Society; for many years city health officer; died March 24, aged 66, of arteriosclerotic heart disease.

Hobart, Francis William ✠ Lake City, Iowa; State University of Iowa College of Medicine, Iowa City, 1928; served during World War II; for many years affiliated with McVay Memorial Hospital; died March 11, aged 49.

Hogue, William Love ✠ Villa Rica, Ga.; Atlanta School of Medicine, 1907; died Jan. 19, aged 73.

Holland, Eugene Amos ✠ Fairmont, W. Va.; Jefferson Medical College of Philadelphia, 1929; died April 6, aged 48, of pulmonary edema.

Holland, Howard Grey ✠ Leesburg, Fla.; Emory University School of Medicine, 1923; member of the Southeastern Surgical Congress and the American Academy of General Practice; past president and vice-president of the state board of medical examiners; served as medical consultant for the Florida Industrial Commission; owner of the Theresa Holland Clinic and Hospital; died Feb. 13, aged 57, of hypertension and acute congestive heart failure.

Holley, Erving ✠ Middletown, Conn.; Albany (N. Y.) Medical College, 1896; life member of the American Psychiatric Association; served during World War I; at one time affiliated with Connecticut State Hospital in Middletown, and Brattleboro Retreat in Brattleboro, Vt.; died March 24, aged 82, of coronary sclerosis.

Holmes, Grace Williams Atkins ✠ Rumson, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1898; at one time a medical missionary in Puerto Rico, and founder of the Presbyterian Hospital in San Juan; formerly practiced in Elizabeth, where she was a member of the board of health for many years, and on the staff of the Elizabeth General Hospital; died March 31, aged 78, of a cerebral vascular accident.

Horan, Thomas Benedict ✠ New Bedford, Mass.; Tufts College Medical School, Boston, 1920; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served on the staff of St. Luke's Hospital; died in Fall River Feb. 22, aged 56, of coronary occlusion and hypertension.

Hovey, Robert Ferry, Springfield, Mass.; New York Homeopathic Medical College and Hospital, New York, 1897; fellow of the American College of Surgeons; formerly member of the State Board of Registration in Medicine; for many years on the staff of the Wesson Memorial Hospital; died Feb. 16, aged 78, of carcinoma of the tongue.

Hoyt, Wilbur F., Paw Paw, Mich.; Starling Medical College, Columbus, 1885; past president of the Kalamazoo Academy of Medicine; on the staff of the Lake View Community Hospital, where he died March 17, aged 91, of chronic nephritis, uremia, and arteriosclerosis.

Hughes, John Adam ✠ Portland, Ore.; University of Oregon Medical School, Portland, 1913; served during World War I; affiliated with Holladay Park and St. Vincent's hospitals; died March 8, aged 70, after a fall in which two fractured ribs punctured a lung.

Jekels, Ludwig, New York City; Medizinische Fakultät der Universität, Vienna, Austria, 1892; died April 3, aged 86, of arteriosclerotic heart disease.

John, Rutherford Lewis ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1911; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; consultant in orthopedic surgery, Thomas M. Fitzgerald-Mercy Hospital in Darby, and St. Christopher's and Episcopal hospitals; died Jan. 24, aged 67.

Leo, Louis Selnik ✠ Norfolk, Va.; Medical College of Virginia, Richmond, 1927; fellow of the American College of Surgeons; served during World War II; affiliated with De Paul Hospital, Leigh Memorial Hospital, and the Norfolk General Hospital, where he died March 17, aged 50, of coronary thrombosis.

Linhart, Lawrence Ritchie, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1913; died March 21, aged 66, of coronary thrombosis.

McElroy, Stephen L., Ocilla, Ga.; Atlanta College of Physicians and Surgeons, 1900; died March 9, aged 77, of acute congestive heart failure.

Mele, Vincent James Jr. ⊕ Newark, N. J.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1943; interned at St. Michael's Hospital, where he served a residency; formerly a resident at New Jersey Sanatorium for Tuberculosis Diseases in Glen Gardner; associate medical director of the Blue Shield Medical-Surgical Plan of New Jersey; affiliated with St. James Hospital and St. Michael's Hospital, where he died March 11, aged 38, of rheumatic heart disease and uremia.

Mellott, Albert N. ⊕ Ambridge, Pa.; Baltimore Medical College, 1909; past president of the Beaver County Medical Society; for 16 years a member and for 12 years president of the school board; for 41 years physician for American Bridge Company of Ambridge; staff member emeritus, Sewickley Valley (Pa.) Hospital, where he died Jan. 6, aged 73, of coronary thrombosis and diabetes mellitus.

Norwood, John Kirk ⊕ Jacksonville, Fla.; Vanderbilt University School of Medicine, Nashville, 1916; a member of the medical staffs of Duval Medical Center, St. Luke's Hospital, and St. Vincent's Hospital; died Feb. 19, aged 61, of coronary thrombosis.

Odiorne, Joseph Ernest ⊕ Coopers Mills, Maine; Medical School of Maine, Portland, 1901; died Dec. 21, aged 77, of acute coronary occlusion and myocardial infarction.

Pomeroy, Edward Stuart ⊕ Salt Lake City; Northwestern University Medical School, Chicago, 1916; specialist certified by the American Board of Urology; an Associate Fellow of the American Medical Association; served as treasurer of the Utah State Medical Association; on the staff of the Holy Cross Hospital; died March 31, aged 70.

Pratt, Ernest Frederick ⊕ Lowell, Mass.; Middlesex College of Medicine and Surgery, Cambridge, 1921; served during World War I; affiliated with St. John's Hospital and Shaw Hospital, where he died March 18, aged 61, of chronic nephritis and hypertension.

Ralston, Benjamin Winfield ⊕ Commerce, Okla.; Kansas City (Mo.) Medical College, 1901; served on the staff of the Miami Baptist Hospital in Miami; died March 26, aged 81, of arteriosclerosis.

Rasel, Harry Chapman, Tarentum, Pa.; University of Pittsburgh School of Medicine, 1935; served an internship and residency at St. Francis Hospital in Pittsburgh; affiliated with Allegheny Valley Hospital; died in the Tuberculosis League Hospital in Pittsburgh March 7, aged 44, of pulmonary tuberculosis.

Rawitz, Sidney Bernard ⊕ Bradley Beach, N. J.; Maryland Medical College, Baltimore, 1912; Bennett Medical College, Chicago, 1913; for many years practiced in Newark, N. J.; died in the Fitkin Memorial Hospital, Neptune, March 25, aged 63, of hypertensive cardiovascular disease.

Robbins, David Robert ⊕ Los Angeles; University of Oregon Medical School, Portland, 1923; affiliated with California Lutheran Hospital; died March 18, aged 62, of coronary occlusion.

Robinson, John Q. Jr. ⊕ West Newton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; died March 5, aged 86, of coronary occlusion.

Robinson, Roy Blair ⊕ Homestead, Pa.; University of Pittsburgh School of Medicine, 1943; served during World War II; on the staff of the Homestead Hospital; died Feb. 27, aged 37, of coronary occlusion.

Roby, Harlow Stanley ⊕ Milwaukee; the Hahnemann Medical College and Hospital, Chicago, 1901; Northwestern University Medical School, Chicago, 1904; veteran of the Spanish-American War and World War I; served on the staff of St. Luke's Hospital; died March 28, aged 81, of acute myocardial infarction.

Rosenheimer, Alfred Max ⊕ Beaver Dam, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1907; died Jan. 8, aged 70, of arteriosclerotic cardiovascular disease.

Ross, Clarence Crump, Columbus, Ohio; Cincinnati College of Medicine and Surgery, 1894; served on the staff of St. Anthony's Hospital; died March 18, aged 85, of cancer.

Rouh, Charles Fredrick ⊕ Myerstown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1927; died Jan. 7, aged 51, of coronary embolus.

Standish, Frank Billings ⊕ New Haven, Conn.; Yale University School of Medicine, New Haven, 1903; formerly on the faculty of his alma mater; died March 28, aged 80, of cerebral hemorrhage and arteriosclerosis.

Starmann, Bernard Henry ⊕ Cass City, Mich.; Creighton University School of Medicine, Omaha, 1930; past president of the Tuscola County Medical Society; affiliated with Pleasant Home Hospital; died March 12, aged 47, of coronary occlusion.

Stephens, Charles N. ⊕ Industry, Ill.; Chicago Homeopathic Medical College, 1896; health officer; died Feb. 28, aged 81, of a spinal injury received in a fall.

Stoloff, Benjamin ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1906; past president of the East New York Medical Society and the pediatric section of the Kings County Medical Society; specialist certified by the American Board of Pediatrics; attending pediatrician at the Beth-El Hospital and Brooklyn Women's Hospital, where he was chief of the outpatient department of pediatrics; died Feb. 6, aged 69, of acute coronary thrombosis.

Stoner, Robert Royer ⊕ Carlisle, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; on the honorary staff of Carlisle (Pa.) Hospital, where he died Nov. 23, aged 85, of arteriosclerosis.

Stuckey, Harrison Warner ⊕ Lieutenant Colonel, U. S. Army, retired, Los Angeles; Hering Medical College, Chicago, 1897; veteran of the Spanish-American War and World War I; entered the Medical Corps of the U. S. Army as a major in 1920; promoted to lieutenant colonel on May 13, 1937; retired Aug. 31, 1938; at one time professor of military science and tactics at the University of Buffalo School of Medicine; died April 1, aged 79.

Sumner, George Herbert, Asheboro, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1923; specialist certified by the American Board of Preventive Medicine; for many years county health officer; died in Chapel Hill Dec. 13, aged 53, of myocardial infarction.

Tincher, Joseph Cortes, Boonville, Mo.; St. Louis University School of Medicine, 1926; secretary of the Cooper County Medical Society; died in St. Joseph's Hospital March 10, aged 54, of pneumonia.

Tracewell, George, St. Louis; American Medical College, St. Louis, 1905; medical examiner for county coroner; served on the staffs of St. Ann's Maternity, St. John's, St. Mary's, and Missouri Baptist hospitals, and Evangelical Deaconess Hospital, where he died March 16, aged 81, of arteriosclerosis.

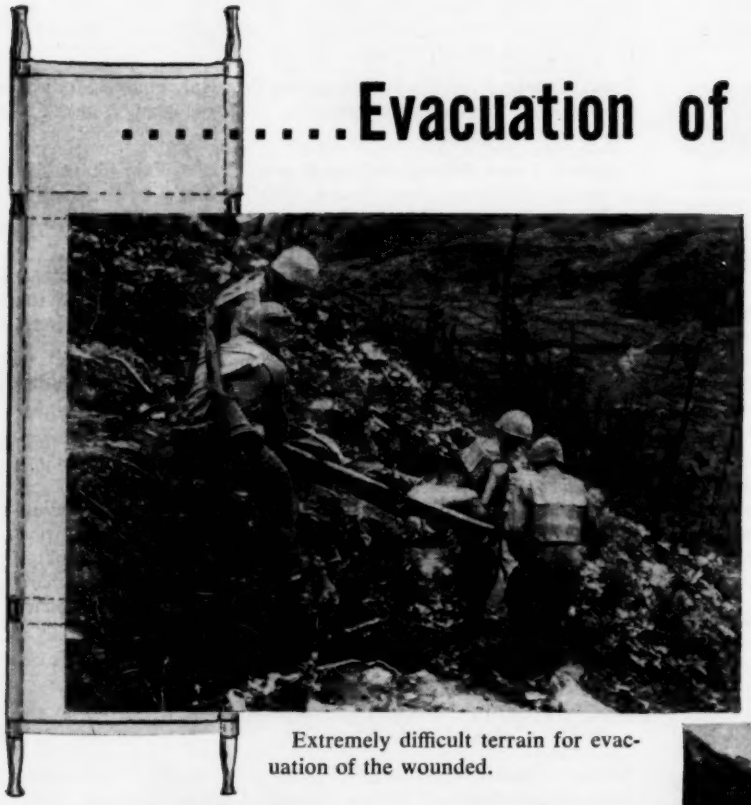
Tropp, Rebecca J., New York City; Long Island College Hospital, Brooklyn, 1922; for many years a member of the staff of the health division of the board of education; died March 25, aged 55, of hypertensive heart disease and cerebral hemorrhage.

Weinstein, Joseph Hamilton ⊕ Terre Haute, Ind.; Miami Medical College, Cincinnati, 1897; fellow of the American College of Surgeons; affiliated with Union Hospital; died Jan. 26, aged 77, of a cerebrovascular accident and cholecystitis.

Wilson, Fernando Ivanhoe ⊕ Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, Kan., 1921; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War II; affiliated with Kansas City General Hospital and St. Luke's Hospital, where he died Feb. 23, aged 59, of retroperitoneal hemorrhage.

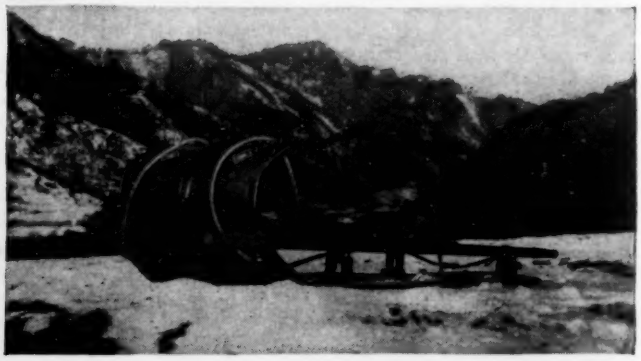
Wilson, John Flavel Jr. ⊕ Lakeland, Fla.; Medical College of the State of South Carolina, Charleston, 1905; served as city health officer; for many years physician for the Florida Southern College; affiliated with Morrell Memorial Hospital, where he died Jan. 31, aged 75, of coronary thrombosis.

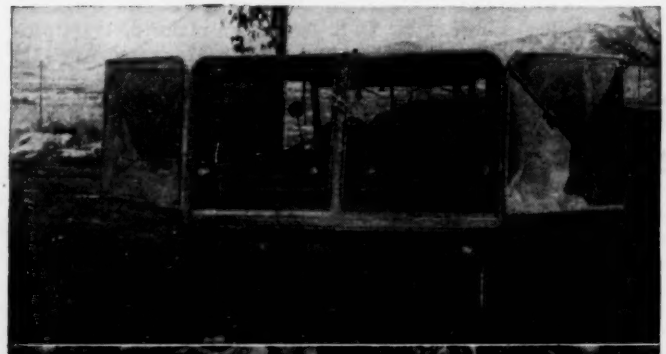
.....Evacuation of Casualties in Korea



Extremely difficult terrain for evacuation of the wounded.

These pictures showing battalion medical personnel and equipment in certain areas in Korea were supplied, on request, by Major Gen. Earle Standlee, U. S. Army, Chief Surgeon, Headquarters, Far East Medical Section, and were previously published in the *Medical Bulletin of the U. S. Army Far East.*





Left, litter jeep used to evacuate casualties from forward areas. Above, litter sled for evacuation of casualties over icy terrain, built by a medical soldier. Left below, tramway used successfully for evacuation in the Punch Bowl area.

At lower left and above, exterior and interior views of a battalion aid station.

FOREIGN LETTERS

BELGIUM

Jaundice After Transfusion.—At a meeting of the Flemish Medical Academy, Warmoes and Peeters reported on the incidence of jaundice following blood transfusions. They examined the records of 66 patients with viral hepatitis to see whether any inoculation had been given two to six months before the onset of the jaundice and whether gastrointestinal symptoms had been observed in the prodromal stage. Gastrointestinal signs are often absent in homologous serum hepatitis, but usually present in infectious hepatitis. There were 19 patients in whom inoculation might have been the cause; only 7 of these had gastrointestinal symptoms in the prodromal stage. Of the 47 patients who had not had inoculations, 34 had prodromal gastrointestinal symptoms. The authors cited an epidemic of homologous serum hepatitis in which 90% of the patients were receiving injections of calcium. No further cases occurred when the calcium injections were stopped. The authors reported 10 additional cases of homologous serum hepatitis; 8 followed whole blood transfusions; one followed a transfusion of blood and plasma; and one followed a transfusion of plasma alone. Acute yellow atrophy leading to death developed in two of these patients. In patients receiving transfusions from more than one donor, the danger of hepatitis was increased. Four of these 10 patients had prodromal gastrointestinal symptoms.

Teaching Children in Sanatoriums.—At the Eighth Session on Infantile Pneumophthisiology held in May, 1953, in Brussels, Hendricks-Duchaine reported on the education and leisure of children in the sanatoriums and preventoriums of Belgium. There is no legal obligation for the instruction of tuberculous children, but the Ministry of Public Education subsidizes classes attached to sanatoriums and preventoriums. The courses are preferably given in the cure galleries or in special classrooms. Individual instruction is given to children with chronic advanced tuberculosis and to those recovering from tuberculous meningitis. Of 200 children who were released from sanatoriums less than 10 years ago, 55% were in the class of their age or one year behind, 24% two years behind, 11% three years behind, and 9% more than three years behind. Teaching is essential in all sanatoriums and should be conducted outdoors.

Temptation of Psychosurgery.—At a meeting of the Mental Medicine Society of Belgium, Dr. J. Ley spoke of the temptation of psychosurgery. He warned against performing this type of operation with insufficient indications and deprecated destruction of the frontal lobe in order to suppress symptoms that might be controlled by adequate medical treatment. He emphasized the benefits of psychosurgery in properly selected cases. The principal indication is chronic anxiety for which all forms of psychotherapy have been tried without success. Such cases are relatively rare. A unilateral operation is often adequate. He went on to say that psychiatrists rather than legislators should establish the rules that would prevent abuse of this form of treatment.

Medicine in the Daily Press.—The Belgian Medical Press Association devoted a few meetings to the question of publication by the large daily newspapers of popular medical articles. These articles, which are hastily written and sometimes inaccurate, can have a bad effect on the general public. The association sent a letter to the 12 principal newspapers in Belgium asking them to exercise strict censorship of the medical articles published by them. With one exception, the papers did not even acknowledge receipt of the letter, and this was the end of the matter. Recently the secretary of the Superior Council of the Order of Physicians requested the association to call the attention of the press to the dangers that may result from the publication by certain newspapers of medical consultations by correspondence.

The items in these letters are contributed by regular correspondents in the various foreign countries.

BRAZIL

Vaccination Against Tuberculosis.—In the January and February, 1954, issues of the *Revista paulista de tisiologia,* Drs. A. N. Martins and B. P. Sampaio reported the latest results of their researches with the concurrent method of vaccination with BCG in São Paulo. Between January, 1948, and December, 1951, the authors vaccinated 556 persons, of whom 400 (71.9%) received the full dose of 600 mg. Of these 400, periodic clinical and roentgenologic examinations were made on 221. Although, in general, the vaccine was well tolerated, 41 children had vomiting following its administration. Vomiting occurred more frequently after the second and subsequent doses. By giving 500 mg. of vitamin C by mouth, this side-reaction was prevented. Only two children showed radiological changes of the lungs. These changes disappeared without any residual scarring. In one child, however, the radiological changes lasted almost three months, during which time the child had whooping cough. The authors believe that in both children the changes were nonspecific. There were eight deaths among all the children under observation. These were due to various causes. Pulmonary tuberculosis was given as the cause of death in only one of these, but the authors think that the statement cannot be confirmed, because the radiological findings were normal one month before death occurred and also because there was no positive evidence. The authors concluded that the vaccine had a favorable effect on the patients with tuberculosis and on the occurrence of tuberculosis in children who lived in an environment in which they were continually exposed to infection.

Carcinoma of the Cervix.—At the sixth annual meeting of Brazilian gynecologists, Dr. Arnaldo de Moraes reported on carcinoma of the cervix, stage 0, otherwise known as preinvasive carcinoma in situ or intraepithelial cancer. There is as yet a great deal of misunderstanding and contradiction regarding this condition. It was due to the fundamental work of Meyer that the former implication that cancerous epithelium was always invasive was discarded. With the simultaneous use of colposcopy and biopsy, better results are achieved, but the main decision as to the diagnosis still depends on the results of histological examination by the pathologist. It seems reasonable to include between stage 0 and stage 1 the "microcarcinoma," which cannot clinically be differentiated from the intraepithelial cancer in spite of the millimetric invasion of the basal layer showing a more benign evolution than stage 1 carcinoma. The organization of well-equipped cancer detection centers should facilitate the early detection of carcinoma of the cervix.

Treatment of Hiccups.—At a meeting of the Associação Paulista de Medicina, Drs. Waldo R. de Moraes and Plinio R. Cardoso presented a preliminary note on the treatment of persistent hiccups by supersonic waves when treatment with galvanic current failed, they tried supersonic waves, and the hiccups disappeared after the first application.

ENGLAND

Good General Practice.—A survey by Dr. Stephen Turner of general practice in England and Wales recently was published by the Nuffield Provincial Hospitals Trust. It is based on the author's findings in 30 practices, with 94 physicians, that he personally visited during 1951 and 1952 and that were selected because they were recommended as well-run practices. His broad conclusion, from his own data and that available elsewhere, is that about a quarter of all general practitioners are "very good"; about half are "good, sound, and reliable"; and the remaining quarter are "less satisfactory." Included in this last quarter is a final twentieth "for whom it is difficult to find any excuse" and, as he points out, a twentieth of general practitioners means nearly 1,000 physicians who are in charge of some 2 million patients.

It is estimated that at the end of 1952 there were 450 general practitioners in private practice, compared with 20,500 in National Health Service practice. Most National Health Service general practitioners have only a few private patients, but some still have a large number. About 1.5% of all patients are attended by physicians doing private practice only. Slightly over half the physicians in the National Health Service are in partnership. This is the main mode of entry into general practice, with or without a preliminary period as assistant. With regard to paying the physician, Dr. Taylor says: "In the course of the present survey, the independence of mind and spirit of the general practitioners visited has been most impressive. Although the great bulk of their income has come from the State, their overwhelming concern has been with their patients rather than any employing authority. They have worked to satisfy their own professional standards rather than any imposed from above. This combination of sturdy independence with a true spirit of service appears to be due in no small measure to payment on a capitation fee basis." After listing the various additional payments (most of them quite small) that the practitioner can earn over and above his capitation fees, Dr. Taylor comments: "It has been said that true freedom in the modern world is enjoyed only by those with multiple sources of income. The general practitioner in the National Health Service is in this happy position, and the multiplicity of payments which make up his income adds a spice to life."

Practices are analyzed according to their location. Thus, industrial practices tend to be single or partnerships, with the principals tending to live away from their offices, which in general were of poor quality. They include a substantial minority of physicians who fail to give their patients the service they have a right to expect, and poor medical care is one of the reasons for the enormous queues so often seen in the industrial areas. The physicians in the industrial areas tend to have specially friendly and uncritical relations with their patients but, though it applies only to a minority, the industrial areas are the places where low morale is oftenest found among the general practitioners. In towns with populations of 15,000 to 25,000, general practice seems to reach its finest flowering. Part of the problem of general practice is how to raise the general standard of practice in the industrial areas to that of the country towns. Some young physicians are considering the use of a mobile office in a trailer for serving outlying villages.

Of the annual admissions to the Medical Register, 10% are women, but only 6% of the physicians in general practice are women. Their patients tend to be predominantly women, and two women working in partnership are quoted as saying: "If an unattached man between the age of 20 and 40 appears at the surgery and asks to be registered, we usually refuse to take him on, unless there is some very good reason. The unattached man wanting a woman doctor is almost certainly a peculiar or a psychopath or neurotic of some kind. Equally, we refuse to take on any new elderly gentlemen. . . . Sooner or later they develop prostates, and these are a nuisance to the woman doctor in more than one direction." An unusual feature of the practice of the good woman general practitioner is the number of minor operations performed, and a characteristic feature is the tendency to keep down the list of patients.

In discussing the volume and pattern of the physician's work, it is estimated that the figure for services by the general practitioner per patient at risk per year is between 5 and 5.5. The number of services per physician per day ranges from 27 to 87.

In 3 of 30 practices visited, the physicians were engaged in private practice alone. Of private practice in general it is said that "the quality of work done in such practices for a comparatively small number of patients is high. The physical conditions of practice are excellent, as indeed they must be, to attract the clientele desired." The most usual reason for remaining a private patient is to be able to see the physician at one's own convenience, in one's own home. A physician in a large village said: "The local aristocracy have joined the National Health Service; they wait their turn at the surgery with the rest, but there are one or two business people, and especially their wives, and one or two widows, who insist on remaining private patients." Another physician said: "Half my private patients are gypsies. They reject with horror the idea of registering, and always pay cash on the dot." Dr. Taylor concludes, "It is hard to say how much time and work is devoted to private patients as against National Health Service patients. It is less than might be expected, and certainly less than it seems to the doctor. One general practitioner had 1,600 National Health Service patients and 200 private patients; one-tenth of his visits were to private patients. Financially again, one can give mere impressions only: a typical figure appears to be that 100 private patients yield about £250 a year. [The capitation fee per National Health Service patient per annum is 17*s*.6*d*.] No difference in medical treatment between private and National Health Service patients was seen during the survey." Morbidity rates vary widely in different parts of the country. They are highest in South Wales, Lancashire, and the Tyne area. Of one South Wales practice visited, it is said that "There appears to be scarcely a family without at least one member suffering from some serious illness. . . . In the areas of high morbidity there is much which no hospital treatment can cure; the need for inpatient treatment is something most unpleasant, requiring great courage to face. In South Wales, indeed, it is spoken of as a shock, to be broken gently to both patient and family." The southern Englishman, on the other hand, "accepts a stay in hospital as a matter of course and assumes that he will emerge cured or at least relieved." The question is raised as to "whether the real variation in illness per patient, with which doctors in different parts of the country have to deal, may suggest that a uniform capitation fee is hardly an equitable method of payment." Dr. Taylor considers that "it would be possible to devise a method of weighting areas of high morbidity; but such a system would be very complicated if it was not to cause more anomalies than it cured. In money matters there is something to be said for simplicity and certainty rather than attempting absolute fairness."

On the question of being overworked, Dr. Taylor says: "The more medically efficient the doctor, the less does he seem to feel any special need to discipline his patients. Complaints of being chronically overworked as a result of the thoughtlessness of patients usually come from the least efficient doctors. . . . A well-disciplined practice is one in which there is mutual consideration and respect between doctor and patients. Such respect is built up on the honorable discharge of obligations, without fuss or false sentiment. It is the attitude and behavior of the doctor which determines the degree of discipline exhibited by the patients."

Dr. Taylor is an enthusiast for group practice, though he points out that "general practice can reach the highest level without anything in the nature of a group." On the other hand, his "experience on the survey has strongly suggested that the doctors in a successful group practice do offer the public a better medical service than each would offer on his own." His essential criteria for group practice are a group of three or more physicians working from a single building, housing their main offices, and served by two or more ancillary helpers, and each developing some special medical interest within the sphere of general practice. As compared with group practices he is somewhat critical of health centers, except in new towns and large housing estates. If health centers are established, and under the National Health Service, it is the local authority that is responsible for providing them, he is insistent that the general practitioners "retain their autonomy and personal independence. . . . Discipline within the group must be achieved by the group itself, and the group must be able to expand or contract and to select or dispose of its own members, as well as the secretarial staff it employs. . . . Waiting at the doctor's [office] has become the accepted part of the British way of life. . . . The queue habit is so ingrained that any suggestion by the doctor that people should stagger their attendances has no effect. . . . It is almost universal experience that patients are now extremely considerate about making night calls. . . . It is better to have a good doctor working in bad accommodation than a bad doctor working in the best possible accommodation. . . . In only two of the 41 [offices] visited has there been a patients' lavatory. . . . Circumcision of infants is perhaps the commonest general practice operation, though opinions about its value are diverse and vehement. . . . The doctors who say they do not want, or cannot afford, ancillary help are often those who need it most. . . . The doctor's wife as an active helper in the practice organization is becoming less important. . . . The medical officer of health plays surprisingly little part in the life of the average

general practitioner. . . . It is part of the British tradition of science . . . that men matter more than equipment and that the best work is often done in far from propitious surroundings."

Synthetic Detergents.—Last summer the Minister of Housing and Local Government appointed an expert committee "to examine and report on the effects of the increasing use of synthetic detergents and to make any recommendations that seem desirable with particular reference to the functioning of the public health services." The committee has just presented an interim report, in the course of which it is stated that "Washing products based on synthetic detergents may, like those based on soaps, lead to dermatitis on the hands of some users. Some physicians think that in a few instances the degree and type of dermatitis so caused are more acute than any known to be due to soap powders, but experiments on man and animals indicate that irritation of the skin under conditions of normal use is relatively slight. Although it is possible that the long-term effects of daily exposure may be more serious, the evidence so far shows that despite the widespread use of synthetic detergents throughout the country the incidence of dermatitis is not significantly greater than it was when soaps and alkalis, or preparations based on them, were the only common washing products. Judging by reports from general practitioners, hospitals, the British Launderers' Research Association, textile firms, and local officials concerned with the running of institutions, laundries, and canteens, this appears to be equally true both in industry and in the home, although in the home the synthetic detergents used are normally compounded with other substances. It is known that often the housewife has learned by a process of elimination to select the particular washing product that suits her best, with due regard to the effect on her skin. Many housewives in any event use hand-creams after housework, and this may help to reduce the risk of skin trouble. . . . Whatever type of washing product is used the hands should afterward be thoroughly rinsed in fresh water and dried; it would be helpful if manufacturers stressed the advantages of this in the instructions on the containers. It would also be helpful if some better means could be found of educating housewives as to the quantities of synthetic detergent preparations necessary for particular purposes, for it is probable that the slight existing risks of dermatitis arise less from merely using them than from their excessive use."

It is considered possible that minute traces of synthetic detergents remaining on crockery after washing might get into food or drink and might thus be ingested, but "there is no evidence so far for ascribing any ill-effects to it."

Pharmaceutical Mile.—According to National Health Service regulations, if a patient lives within a mile of a pharmacy his physician is not allowed to undertake his dispensing; the physician prescribes, but the pharmacist dispenses. Recently, in North Wales a village pharmacist reported that an analysis of his prescriptions over a period of nine months showed that only a small percentage bore addresses in a neighboring village less than a mile from his pharmacy. Two physicians disputed the pharmacist's measurements and produced a surveyor's report that along the road between the village and the pharmacy the distance was more than a mile. The pharmacist retorted by producing a surveyor's report declaring that by using a lane the distance was less than a mile. The physicians' reply to this was that the lane was little used, to which the pharmacist replied that the lane was paved and in good condition. In due course, the local National Health Service executive council sat in solemn conclave to decide whether the distance should be measured by the main road, by the lane, or "as the crow flies." The matter was even referred to the Welsh board of health. The board expressed the view that, as most persons would presumably use the footpath for shopping, the distance along the footpath should be taken for the purpose of interpreting the regulations, and so in the end the council decided in favor of the pharmacist that the distance by the lane should be the standard.

Frederick Banting House.—The problem of the elderly diabetic has for long been one of the major interests of the Diabetic Association. An urgent need in this connection was a home, especially since the usual homes for old persons do not generally accept diabetics because of the special diets and extra medical care they need. When, soon after the tragic death of Sir Frederick Banting, the association decided to create a memorial to his memory, it was felt that the most appropriate form this could take was a home for elderly diabetics. As soon as funds became available (and these included a generous donation of £5,000 from the British War Relief Society, Inc., of the United States), a suitable house was bought in Kingston-upon-Thames, Surrey, and early last year it was finally opened. Within a few weeks the home, which was named the Frederick Banting House, was filled to capacity and has remained so ever since. There are 29 residents—all old-age pensioners. Some are chronically sick and mostly bed ridden, and others are aged and infirm but can manage to be up and about for at least part of the day. In order to preserve a home atmosphere, rules and regulations are reduced to a minimum. There is no restriction on visiting hours, and, if medically fit, residents are allowed to visit the neighboring town or their friends.

The Queen is the patron of the Diabetic Association, and toward the end of March, royal interest in the home was demonstrated in a practical way when the Duchess of Gloucester paid a visit to the home. In the course of the visit she met the staff, inspected the house, and chatted with the elderly residents.

General Practitioners and Research.—In the annual report of the British Medical Association, council disappointment was expressed at the absence of general practitioners on the Clinical Research Board recently set up under the aegis of the Medical Research Council to encourage clinical research under the National Health Service. Despite an admission from the Ministry of Health that there was no reason why a general practitioner should not be considered, no such action has been taken. Joint representations are being made with the College of General Practitioners to secure an adequate allocation of available funds for research in general practice and to press the rightful claims of the general practitioner to be represented on the board itself.

NORWAY

Norwegian Field Hospital in Korea.—At a meeting of the Norwegian Surgical Society in Oslo, Dr. Bernhard Paus reviewed his surgical experiences in Korea. During the first two years, 1951 to 1953, 12,000 patients were admitted to the Norwegian Field Hospital, and this total could be raised to more than 50,000 by the inclusion of outpatients. Between May 1, 1953, and the cessation of hostilities on July 27 of the same year, 1,178 operations were performed in this hospital. Paus stressed the difficulties encountered in dealing with shock, and he admitted that there was no one sign or symptom to indicate shock or the onset of shock on the transfer of a patient to an roentgenographic or operating table or an ambulance. With such "shock instability" on the part of the patient, much depends on the experience of a surgeon who may be ill-advised when he defers an operation until shock has been overcome, because under certain conditions the operation itself counteracts the shock. A wound teeming with the live larvae of flies may seem disgusting, but the consumption of necrotic tissue by the larvae helps to clean such wounds. Paus believes that the surgery of the blood vessels may have made greater advances during the past year than any other surgical specialty, outrunning textbook teaching in this field. When the choice has been between reparation by suture and simple ligature, the textbooks have hitherto taught that the former should not be attempted after a certain interval has elapsed since the wound was inflicted. Severe comminuted fractures were also regarded as a contraindication to suture. Paus had learned to extend suture of the large arteries of the arms to a point as distal as the bifurcation of the brachial artery, and when both radial and ulnar arteries were wounded, he was prepared to suture one of them. He applied the same principle to the lower limbs and noted how the prognosis for arterial suture improved since World War II. He calculated that from 2 to 3% of all wartime casualties may require arterial suture. The reduction since World War II in the mortality among the wounded who did not die in action was so great that, while it was 4.5% during World War II, it was down to 2.3% in

Korea. The percentage of wounded soldiers able to return to service rose from 77 to 88% in the same period. These achievements could be traced to pushing field hospitals closer to the front, a more efficient blood transfusion service, antibiotics, and the use of a helicopter service near the front.

Infectious Hepatitis.—Since 1942, infectious hepatitis (including homologous serum hepatitis) has been included among the reportable diseases in Norway. In the fall of 1949, the public health authorities of Oslo tightened the reporting of this disease so that they could obtain fuller information about each case. The data thus provided have been analysed in *Nordisk medicin* for March 25, 1954, by Prof. Haakon Natvig and Dr. Roald Adelsten Jensen, who note that since 1943 there has been an enormous rise in the mortality from this disease. In 1943, there were 3.5 deaths per 1,000 reported cases, whereas in 1950 the corresponding figure was 33.9—a tenfold rise. This rise is probably due to an increase in the number of patients with homologous serum hepatitis and an upward shift in the age incidence, with more adults and fewer children among the patients. A special study was undertaken of the cases of infectious hepatitis reported in Oslo in the three year period beginning Nov. 1, 1949. The 316 patients (134 male and 182 female) could be classified according to the type of disease, which was probably epidemic hepatitis in 170 cases, homologous serum hepatitis in 70 cases, or homologous serum hepatitis in 76 cases. After giving details of cases in which instructive data were obtained concerning the most probable mode of infection, Natvig and Jensen point out that epidemic hepatitis is at least as infectious as typhoid, paratyphoid, or dysentery and that it is conveyed in the same way by infection via the digestive tract. Despite this fact, patients are not sent to a fever hospital but to general hospitals where the necessary precautions against infection are not always taken. Hence the conclusion has been reached that "This state of affairs renders . . . epidemic hepatitis the most neglected of our serious infectious diseases." It is urged that Norway take the consequences of the more recent epidemiological studies of epidemic hepatitis so that it can be treated as the serious disease it is. To this end reports should be made to the health authorities of each case so that the necessary data may be forthcoming and appropriate steps taken to control the disease as quickly as possible. Natvig and Jensen say that, while poliomyelitis provokes clinical symptoms in barely 1% of the infected, epidemic hepatitis probably induces a higher sickness rate.

Sympathectomy for Raynaud's Disease.—In the surgical department of the Rikshospital in Oslo, Prof. Leif Efskind has taken special interest in the treatment of Raynaud's disease by sympathectomy. A member of his staff, Dr. Leif Hellestad, has undertaken a follow-up study of the 19 patients given this treatment in recent years. The interval between the operation and the follow-up examination was from six months to eight years, and the results (classified as excellent, improved, or poor) are published in *Tidsskrift for den norske laegeforening* for March 1, 1954, with the findings of other operators including those of Smithwick and White in 1946. Hillestad classifies his cases according to whether the disease was primary (12 cases) or secondary (7 cases representing such deep-seated pathological changes as obliterating disease of the vascular system). Two of the 19 patients were not operated on because of tabes dorsalis in one and severe arteriosclerosis in the other. Among the 17 patients operated on, there were 12 whose disease was primary and 5 whose disease was secondary. One of the reasons why some of the patients were operated on on only one side was that the patients did not return for the second operation because the first had already afforded them relief on both sides. It was always the worst side that was operated on first, and altogether 26 arms were operated on (20 in the primary group and 6 in the secondary group). The follow-up examination showed that the results of the operation were excellent in 17 cases, improved in 5, and poor in 4. In most of the primary cases, a cure could be claimed, whereas the outcome was likely to be unsatisfactory for the secondary cases. Some observers have noticed a tendency to relapse about two years after the operation, but Hillestad has had no such experience. In his opinion relapses must be traced to the basal disease rather than to regeneration of divided sympathetic fibers. Though he has seen no alarming side-effects from sympathectomy, he has noticed that the patient may suffer from such dryness of the fingers (18 of the 19 patients were women) that they become so smooth that it is difficult to hold a cup. While in one patient a very troublesome headache disappeared after the operation, angioneurotic pain developed in another in the left side of the face after sympathectomy on the right side.

SWITZERLAND

Tuberculosis in Gastrectomy Patients.—In 1947 Olmer established a relation between gastrectomy and pulmonary tuberculosis. Others have since confirmed these observations. At a meeting of the medical society of Geneva on March 28, Demole and Rentchnick reported on 13 patients whom they listed as those whose pulmonary tuberculosis developed in the weeks following operation and those in whom it developed several years after gastrectomy. In many patients, there was no pulmonary lesion before the operation. In others, such lesions had been quiescent for several years. The operation would seem to represent a severe stress in these patients. The pathogenesis in those in whom tuberculosis developed several years after gastrectomy seems to be different from that of the first group. Undernutrition and hypoproteinemia are then responsible for the development of tuberculosis. The authors stress the importance of roentgenograms of the chest before any surgical operation and especially before a gastrectomy. They also strongly recommend a clinical and radiological follow-up of patients who have had a gastrectomy, especially if they suffer from digestive complaints, because tuberculosis developing in these patients frequently progresses rapidly to a fatal termination.

Thromboelastography.—The morbid manifestations of thrombophilic conditions seem to be increasing because of increased recognition, the increase of the life span of the average person, and the side-effects of some of the new chemotherapeutic agents. The multiplicity of the laboratory methods that are used to detect the thrombophilic state is a proof that none is entirely satisfactory. According to R. Della Santa (*Praxis* **43**:89-53 [Feb. 4] 1954), the thromboelastographic method of Hartert offers great promise. It is based on the visual and simultaneously photokymographic observation of all the phases of coagulation, including fibrinolysis, at 37 C. The changes are registered automatically and correspond to the variations of the elasticity of the fibrin. At the moment when the clot forms, and the thromboelastographic curve takes the form of two symmetric branches that quickly separate. Their separation is a direct function of the elasticity of the fibrin. The elasticity of the fibrin as an essential function of the thrombus is far more instructive than the blood viscosity or the optic density of the clot. This method has aided in the detection, prevention, and treatment of thromboembolic phenomena. The observations are made daily until the patient is out of danger.

Amebiasis.—According to M. Demole (*Praxis* **43**:201-203 [March 11] 1954), many patients treated for chronic colitis of unknown origin are suffering from intestinal amebiasis. After reporting that many persons who harbored amebas in their intestinal tract, with or without symptoms of dysentery, had been living in countries where amebiasis is endemic, Demole turned his attention to native amebiasis that has been recognized in Europe since 1915. Once the presence of native amebiasis has been admitted, it is important to recognize it. If the patient has not been living in a country where amebiasis is endemic, the possibility of this disease is usually not considered. Contact with relatives who have been living in the colonies should arouse suspicion. Even when suspected, the diagnosis may be difficult because a search for the amebas does not always result in finding them. Oftener than not proctoscopy affords no aid, and blood examinations do not give definitive diagnostic information. Demole recommends a therapeutic trial with acetarsone and the iodiferous derivates of oxyquinoline, which in some patients give spectacular results.

CORRESPONDENCE

TESTS OF THYROID ACTIVITY

To the Editor:—In an editorial in THE JOURNAL of Feb. 13, 1954, page 586, there is one debatable statement in an otherwise commendable summary of current clinical testing of thyroid function. The statement that "nervousness and hypertension both elevate the BMR but do not affect the [I^{131}] tracer test" should be modified according to our experience in the thyroid clinic of the Cedars of Lebanon Hospital. We, as well as others, reported certain discrepancies with the tracer test as with the other tests of thyroid function (Laboratory Pitfalls in the Management of Thyrotoxicosis, *J. A. M. A.* **149:**504 [May 31] 1952). To repeat what we reported; not infrequently we observed elevated uptake of tracer doses by nervous patients suffering from acute anxiety but who were euthyroid. Sedation for one to two weeks prior to a repeat tracer test would abolish the abnormal uptake in such nervous persons. We hope to report these observations in detail at some future date. But in the meantime a note of warning should be sounded lest uncritical clinical evaluation of laboratory data lead to erroneous treatment of the nervous patient suffering from acute or chronic anxiety. As was stated in our paper it must be emphasized that "The diagnosis of thyrotoxicosis rests not on laboratory data alone but rather on the total picture presented by the patient."

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GENITAL WARTS

To the Editor:—Dr. Ronchese's letter (*J. A. M. A.* **154:**1198 [April 3] 1954) states that he objects to calling a verruca acuminata (or condyloma acuminatum) a venereal wart. His principal reason for this disapproval appears to be a belief that persons are made to suffer "severe psychic trauma" from the stigma of the "venereal label." He also questions the correctness of the use of the term venereal disease for no reason other than the fact that "the transmissions were probably by sexual intercourse."

In spite of the stigma attached, however, it is universally understood that venereal diseases are conditions that develop as results of sexual intercourse with infected persons and that are due to or propagated by sexual intercourse. No other definition of venereal disease is to be found in either a standard or a medical dictionary. In the paper that prompted Dr. Ronchese's criticism, it was reported that all of the 65 men with penile warts who had returned from the Orient admitted having had sexual intercourse with native women there. The same admission was made by the husbands of all of the women with genital warts.

These data are sufficiently convincing for most of us to justify the conclusion that there was, in this group of patients at least, a positive relationship between sexual intercourse and the subsequent development of verrucae acuminatae. In the 89 cases in question, they could hardly be classified otherwise, without creating for the term venereal an entirely new definition. The lesions in these 89 persons should be classified as venereal warts simply because they were consequences of sexual intercourse. Without any question, few if any of these persons would have had genital warts—or would have subsequently suffered psychic wounds—if the men involved had refrained from promiscuous sexual indulgences (which, in many instances, also constituted marital infidelity) while in the Orient.

One of Dr. Ronchese's supporters asserts that he sees "no difference between the etiology of verruca of the hands and verruca on the genitals." This statement probably represents a misunderstanding of the meaning of the word etiology on the writer's part. Actually, the etiology of genital warts is quite comparable to the etiology of all other venereal diseases.

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NEUROCIRCULATORY ASTHENIA

To the Editor:—Dr. Daniel W. Badal, in his recent article "Psychiatric Observations in Neurocirculatory Asthenia" in the March 27, 1954, issue of THE JOURNAL, fails to mention the essence of the malady, which is a hypersensitive autonomic nervous system. When a careful longitudinal history is taken, it will be found that all during his lifetime, if not at the present time, the patient has suffered not only attacks of tachycardia, but also "migraine," blurred vision, cardiospasm or pylorospasm, pruritus, gaseous indigestion, hot flushes, menstrual disturbances, excessive perspiration, constipation alternating with diarrhea, neurodermatitis, or a number of other disturbances, all of which reflect an underlying hypersensitive autonomic nervous system. From an early age, even back to the first day in school, these patients can give vivid accounts of an overactive sympathetic system. As Dr. Badal says, "A body consciousness arises on which the somatic reaction makes a profound impression." This person finds early that, because of blushing, tightness in the throat, dry mouth, tachycardia, or other insistent autonomic disturbances, he cannot compete in school or office without distressing symptoms. To be sure, there are traumatic and contributory factors, such as friends (including physicians), who tell the patient, "It's just your imagination," but one need not look into the unconscious for the basic cause.

Dr. Badal appears to place neurocirculatory asthenia, as some do other somatic symptoms in nervous patients, on a purely psychological basis. Anxiety, it is said, aroused by some environmental situation, produces the tachycardia, or anxiety is converted by unconscious processes into these physical symptoms. Actually, we now know that autonomic disturbances, such as neurocirculatory asthenia, or any of the others mentioned, are not the result of the anxiety, but that both are parallel disturbances, probably arising in the hypothalamus. (After all, emotions, like body temperature and glucose balance, are physiologically produced.) This is not to say that environmental stresses cannot aggravate their degree, but it should be emphasized that anxiety does not arise first and then produce the autonomic disturbance, or vice versa. It is an everyday observation for the psychiatrist to watch the emotional and physiological components of anxiety build up and recede as the patient becomes worse and then improves under rest and psychotherapy. This process is even more graphically observed in depressed, nervous patients who are unable to eat and sleep normally and who are given electroshock therapy. Even the physiology of the skin, an autonomic-endocrine disturbance often present in these patients, improves day by day. After observing the relief of anxiety and how it parallels the improvement in autonomic functions during and after electroshock treatment, Funkenstein, Greenblatt, and Solomon (Autonomic Nervous System Changes Following Electric Shock Treatment, *J. Nerv. & Ment. Dis.* **108:**409, 1948) concluded that the anxiety and physiological disturbances "seem to fit as a hand into a glove." In my book "Manic-Depressive Disease" (Philadelphia, J. B. Lippincott Company, 1953) not only neurocirculatory asthenia but migraine and other autonomic disturbances are described as equivalents of the nervous disorder.

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SOCIALIZED MEDICINE

To the Editor:—In response to the letter to the editor published in THE JOURNAL, March 27, 1954, page 1116, I would like to say that I too have worked in both countries. It does little for the furtherance of medical care if facts are grossly misrepresented. It is quite untrue to state without qualification that physicians are heavily fined or struck off the register for exceeding a prescribed amount of antibiotics. Community for community, in my opinion, the English are getting a somewhat better standard of medical care than persons in the United States,

limited as they are in so many instances by the ability to pay. When a patient is referred to a hospital, he is seen by the consultant, not the resident. In many areas a full clinicopathological service is provided for the general practitioner, and this is being rapidly extended to all areas. The implication in one of the recent pamphlets of the American Medical Association, that socialized medicine (a term that I as an English Tory do not recognize) has led to the hospitals' being filled with malingerers, is not only untrue but insulting to English consultants.

The English National Health Service is an English concern and has defects that I think are rapidly disappearing. It works, but it is not one of our exports and we have no desire to suggest its introduction into any other country. All of us, however, irrespective of political creed, resent the gross misrepresentation that is continually being put out from certain quarters.

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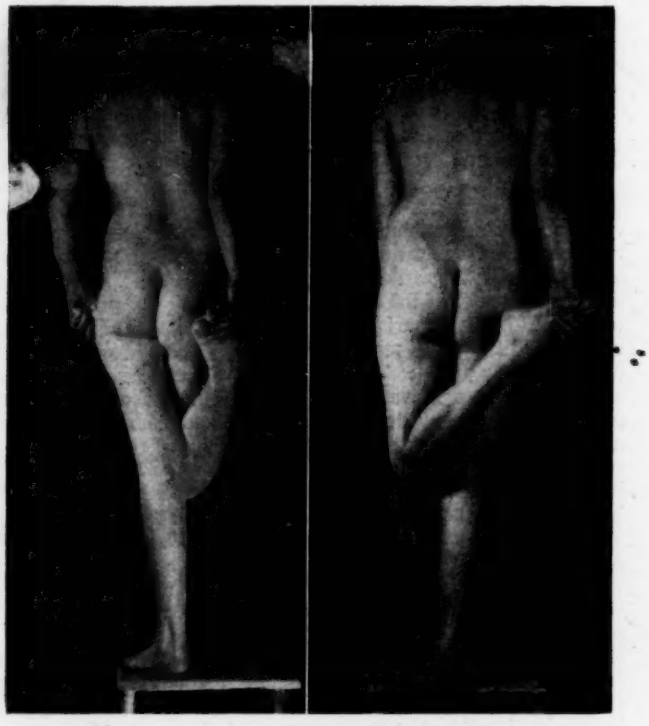
TEST FOR OUTWARD ROTATION OF THE LEG

To the Editor:—About 20 years ago, while making a routine examination of a young girl who complained of discomfort and disability of one hip, I discovered an interesting sign. As the girl



reclined face down I performed the Ely-Nachlas test on both sides. On the right side, the right heel approached and touched the right buttock; this was normal. In striking contrast, the left heel approached and touched the right buttock. I interpreted the test to indicate a fixed outward rotation of the left hip, and this observation has been confirmed many times.

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CONTRACTION OF LEFT LEAF OF DIAPHRAGM

To the Editor:—In the article by Drs. Sjoerdsma and Gaynor on "Contraction of Left Leaf of Diaphragm Coincident with Cardiac Systole" (*J. A. M. A.* **154:**987 [March 20] 1954), a very questionable interpretation is given to the electrocardiographic findings. The authors stated that a deformity of the repolarization forces (ST-T complex) represented electrical potentials induced by contractions of the diaphragm occurring with each cardiac systole. In my judgment this is an erroneous interpretation. In a recent article in *Circulation* (December, 1953), Surawicz and Lepeschkin report that the so-called prolonged Q-T interval of hypokalemia is actually a normal Q-U interval. They explain that in this condition the Q-U interval is confused with the Q-T interval, because there is a merging of the T wave with a prominent U wave. This paper is well illustrated and documented and undoubtedly is an important contribution to the understanding of electrocardiographic findings in certain electrolyte disturbances.

On the basis of Surawicz and Lepeschkin's criteria for hypokalemia, the interpretation of the electrocardiograms of Sjoerdsma and Gaynor are regarded as erroneous. Analysis of the tracing, especially of lead V_4, shows what appears to be a prolonged Q-T interval, but this in reality is a normal Q-U interval, which is the result of an incomplete fusion of a small T wave with a prominent U wave. This pattern is typical of that of hypopotassemia as described by the authors of the article in *Circulation*.

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PSEUDOHEMATURIA DUE TO DRUGS

To the Editor:—I would like to comment on the article on pseudohematuria caused by *p*-aminosalicylic acid, sulfonamides, and *p*-aminobenzoic acid by Horowitz, Salkin, and Gilrane (*J. A. M. A.* **154:**676 [Feb. 20] 1954). These authors discuss the interesting color reaction that occurs when primary arylamine compounds react with certain chemicals, notably calcium hypochlorite and aqueous solutions of chlorine and bromine. Since halogens are the common elements in these chemicals, it is postulated that the color, produced when the arylamines and these chemicals react, is due to the presence of halogenated arylamines, the halogen being substituted for either amine hydrogen or the benzene ring hydrogen. It should be pointed out, however, that colored organic molecules contain certain types of atoms or radicals called chromophore groups and that in order to produce a colored molecule from a colorless molecule there must be produced within, or added to, the colorless molecule a chromophore group. Neither chlorine nor bromine are chromophore groups, and their addition to a colorless molecule usually produces a colorless compound. It should be noted, moreover, that calcium hypochlorite is a very powerful oxidizing agent, the mechanism of its oxidizing power being the reduction of hypochlorite radical to chloride with release of nascent oxygen. Aqueous solutions of bromine and chlorine act in an analagous manner. Chlorine, for example, reacts with water to produce hydrochloric acid and hypochlorous acid, the latter then breaking down to produce nascent oxygen and hydrochloric acid. The active oxygen is capable of reacting with the amino group of the arylamines to produce various colored oxidation products. Aniline, for example, may be stepwise oxidized to produce phenylhydroxylamine and nitrosobenzene; these two compounds may then subsequently interact to form azoxybenzene, which is colored. Other oxidizing agents may produce this type of color change. Potassium dichromate and sulfuric acid, for example, will react with aniline to produce a purple-colored solution and with sulfathiazole to produce a reddish-brown solution. Dilute nitric acid will react in a similar fashion with sulfathiazole.

The authors concluded, on the basis of experiments with hydrogen peroxide and *p*-aminosalicylic acid, that the color reaction does not occur with oxidizing agents. Hydrogen peroxide, however, under the influence of proper catalysts will oxidize the arylamines. Dilute hydrogen peroxide, catalyzed by ferrous ion, for example, will oxidize sulfanilamide in solution to a red substance, probably nitrosobenzene sulfonamide. Other substituted primary arylamines may be oxidized in a similar manner to produce colored end-products. While some chlorination of these arylamine compounds may occur, the probable explanation of the color produced when arylamines and calcium hypochlorite are mixed is an oxidation of the arylamines, and possible conjugation of these oxidation products, to colored end-products.

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A CONFUSION OF TONGUES

To the Editor:—There is a glaring inaccuracy in the first paragraph of "A Confusion of Tongues" (*J. A. M. A.* **54:**1093 [March 27] 1954). Unfortunately, the end of the first paragraph says, "and to change every malar bone to zygoma." The latest dictionaries, such as the "New Gould" and the 18th edition of Stedman, give zygoma as the equivalent of arcus zygomaticus of the BNA. The arcus zygomaticus is formed from the processes zygomaticus of the os temporale and the processes temporalis of the os zygomaticum. Although I concede that both of these dictionaries use the cheek bone as a second meaning for zygoma, surely anyone pleading for accuracy in terminology would not be satisfied with second meanings.

So far as anatomy is concerned, the problem is not so simple as the first paragraph of the editorial would lead us to believe. In 1895, that is 59 years ago instead of 30 years ago as stated in the editorial, the Anatomical Society, actually the German Anatomical Society, adopted what is referred to as the Basle Nomenclature or the BNA. At this time there were 129 non-German members and 145 German members. The meetings were always held in German cities, and the language of the society was always German. Anatomists of other countries were urged to participate in stabilizing an anatomic nomenclature, but, obviously, this participation was overshadowed by the German contingent. This fact unquestionably introduced more polysyllabic words than the use of Greek and Latin word roots justified. There has never been a list of English equivalents agreed on for use as substitutes for the Latin forms. It is this fact that is probably responsible for your preference of zygoma for zygomatic bone. So far as I am concerned, the current German nomenclature, the IN, the Jena revision, is stylistically more Germanic than the original BNA. The Basle Nomenclature was not completely satisfactory to certain thorough-going German anatomists and obviously did not please anatomists of other languages, although everyone hailed it as an effort in the right direction. It is to be noted that Toldt made constant use of terms in his atlas with the notation "nicht in BNA," in other words a structure not provided for by the Basle agreement. This but emphasizes that anatomic structures are inventions rather than discoveries. Each specialty invents its own series of structures that are important to the specialty. This was well recognized by the original devisers of the BNA. I refer those interested to A. C. Eycleshymer's translation of His' introduction to the presentation of names of BNA (Anatomical Names, New York, William Wood & Company, 1917).

I have always maintained that the sole purpose of a terminology was to transmit ideas. Whenever a terminology fails to do this, it is no longer useful. It might come as a surprise to many how much anatomic information can be conveyed without the use of anatomic names. Until we in the United States lose our embarrassment when we use Latin terms, I am afraid that the eponym with all of its good and bad points will remain with us. American anatomists have been alert to this problem for a good many years. Twenty years ago a committee composed of Professors Jackson, Ranson, Terry, Todd, and Corner prepared an edition of anatomic word lists. In parallel columns were presented the Basle Nomenclature (BNA), the British revision (BR), and the then proposed German revision (known as the NK, now the IN).

To be successful, an anatomic terminology should cover the anatomy of the medical specialties, and it should be as nearly international in its scope as possible. No doubt the international character would be limited to the anatomies of the principal European languages. There would be nothing gained, for example, by including usage of the Hebrew University, which represents a conversion of Latin and Greek terms into Hebrew. Once an international terminology is agreed on, medical workers in each language area could agree on the vernacular equivalents of the official terms. Personally, I would prefer the terminology of anatomy to be a formal one and not one of the vernacular. The problem does not parallel the problem of prescription writing. Since very few of us will be fluent in the classical languages, we will not be confused by the several meanings of "spatium," for example, but it will always mean to us a surgical space or a potential space. To use the English word "space," we immediately have in our mind numerous equivalent meanings. We certainly do not think of a cavity filled with areolar tissue. Unless our fundamental character changes, an ideal of a classical terminology will not be realized in the near future. The roentgen ray was discovered about the same time that the BNA was devised. The contributions to anatomy from roentgenology alone would seem to be of sufficient volume to merit a complete revision of our anatomic terminology. Perhaps the terminology should be constantly re-edited since anatomy is far from a static discipline.

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FREEDOM AND THE MEDICAL PROFESSION

To the Editor:—Most people in this country are opposed to "socialized medicine." Not everybody seems to understand what constitutes the socialization of medicine and the mechanisms that now are so actively establishing socialization. There is even less agreement apparently as to what the medical profession is in favor of, what its members stand for, and what is their program for adequate medical care.

Medicine as a profession has been based on three freedoms. Foremost of these has been freedom of choice; freedom of the patient to choose his physician—this is basically competition—and freedom of the physician to accept or reject a patient—this is essential to the uniquely personal nature of professional rapport. Second is freedom of action; freedom to act solely in the interest of the patient without interference of any sort but especially by the one who pays the bill. The third is the freedom to set the fee in the traditional manner according to the means of the patient and without regard for the unmeasurable value of the physician's service.

This then is our battleground wherever these three freedoms are menaced: If we lose these three freedoms, we surrender our claim to the status of a profession functioning to serve humanity and we become a mere trade selling our services for hire. When a sick person is compelled to go to a certain physician, his confidence in him is lost by that very fact of compulsion, and the physician's effectiveness is impaired. When the physician is compelled to attend a "captive" patient, a similar distrust exists. When the physician is required to please anyone other than the patient (a "third party"), conflicting interests always arise. When the physician is unable to set his fee to amply reward himself from those able to pay, he can not have time and concern for those unable to pay.

Threatening these three freedoms, of course, is the specter that the physician will be forced to work as a governmental bureaucrat. Actually now impairing these freedoms in many places in varying degrees are numerous contractural, welfare, and insurance schemes. Contract practice invariably limits the freedom of choice and usually the other two. Welfare agencies notoriously interfere with freedom of action such as by approved lists of drugs with the chief virtue of cheapness. Insurance commonly attempts to set the fee or to obviate it entirely by hiring the physician at a wage. In my opinion, the service type of insurance that conceals the fee from the patient is not satisfactory. For example, the virtues of sickness insurance can be obtained by the indemnity type that reimburses the patient and that does not directly involve the physician.

The positive health program of the medical profession, therefore, must be to regain and to maintain its status as a profession with the three basic freedoms of choice, action, and fee. This program is time tried and proved. It is no happenstance that the best medical care in the world and the greatest progress in medical science have occurred here where the medical profession has been freest. Any existing and proposed health scheme should be judged and accepted, modified or rejected according to its effect on these three freedoms. "Socialized medicine" is merely the ultimate in the loss of these freedoms, the partial loss of which can occur through some form of so-called sickness insurance and welfare and contract practice. The struggle for the individual man to be free from oppression has been going on since antiquity, and we physicians are more apt to win our battle if we know exactly what we are fighting for—and against.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Malpractice: Sufficiency of Evidence to Warrant Submission of Case to Jury.—The plaintiff sought damages for injury alleged to have been caused by the negligence of a resident physician at Duke University Hospital. The suit was brought against both the resident and the hospital and resulted in a judgment of nonsuit in favor of the defendants. The plaintiff, therefore, appealed to the Supreme Court of North Carolina.

The plaintiff was suffering from fallen arches and pain in his feet and consequently entered the orthopedic clinic of Duke Hospital. After wearing shoe supports and trying other treatments, he was advised that he had some type of occlusive vascular or peripheral vascular disease, and a lumbar sympathectomy was recommended. This involves the surgical removal of nerve tissue and ganglions that control the muscles of the blood vessels, thereby reducing the spasms of the blood vessels by paralyzing the muscles. This allows the vessels to open up and increases the flow of blood. Whatever may have been the cause of the plaintiff's trouble, said the court, his disease appeared to have been in the early stages. Without a complete and satisfactory diagnosis, however, the plaintiff was persuaded by agents of the hospital to submit to what was described to him as a minor or simple operation requiring only a small incision in his back and the clipping of a nerve, which would necessitate his being in the operating room only 40 to 45 minutes. Instead, an incision 8 in. (20.3 cm.) in length, extending from the ninth rib to the rectus sheath, was made in the abdomen, and through this all internal organs were lifted out of the way for the purpose of exposing the left lumbar sympathetic nerve and ganglions. These are located along and in front of the spinal column. The operation was proceeding without apparent difficulty when, as the nerve and three ganglions were being removed, the nerve chain snapped and the fourth ganglion disappeared behind a mass of tissue. While exploring for the fourth ganglion, the resident-defendant inadvertently punctured one of the two large vessels that control the flow of blood to and from the left lower extremities. Profuse, massive, and uncontrolled bleeding followed. These large vessels were bound together by a mass of fibrous tissue that made the vessels easy to tear and more difficult to separate and repair. In his effort to part this mass of fibrous tissue, the resident-defendant perforated or produced fissures in the vessels in a number of other places. The bleeding became more profuse, and the plaintiff's condition became precarious. The resident-defendant then made an incision in the plaintiff's left thigh near the groin, followed a blood vessel from that point to a point as close as possible to the point of bleeding, and there tied off that vessel. This procedure failed to control the bleeding, however, and it was discovered that both the big artery and the big vein had been damaged by several punctures or tears. Owing to the protracted operative procedure and the great loss of blood, the plaintiff was in a critical condition and in a state of shock.

The resident-defendant had undertaken this difficult operation when there was no supervisory surgeon available in the hospital for consultation, advice, and aid. An effort was made to locate the head of that branch of the surgical service, but he was unavailable. Eventually the chief of the surgical service of the hospital was located at his home. When he arrived at the hospital, all operative procedure was at a standstill, and the bleeding was temporarily controlled by means of a pack. Upon discovering the condition of the plaintiff, the chief of the surgical service abandoned all efforts to repair the damaged blood vessels and directed his attention toward saving the plaintiff's life. With the aid of the resident-defendant, he tied off the fibrous tissue that included the torn blood vessels and clipped them *en masse*. With these main vessels severed, the blood supply to that area of the plaintiff's body was greatly diminished, and on recovering from the anesthetic, the plaintiff discovered that he was paralyzed from his hips down. The only hope of an adequate blood supply to his lower left leg and thigh was the development of a collateral circulation by means of smaller blood vessels. As this collateral circulation did not materialize, gangrene developed, and the resident-defendant amputated the plaintiff's left leg below the knee. Because of defects in this amputation, the plaintiff underwent another operation by the resident-defendant in which his left leg stump was débrided. Later it was necessary for another physician to reamputate the plaintiff's left leg, removing the knee joint. A myocardial infarction next developed; subsequently, a blood clot in the plaintiff's right leg caused gangrene, and the plaintiff's right leg was amputated by another physician. From these operations and the suffering incident thereto, the plaintiff acquired a drug habituation.

Excerpts from the pleadings, said the court, tend to show that the plaintiff neither authorized nor consented to the operations performed on him and that he "did not need or require any operation" at the time he submitted to one. The evidence also showed that the plaintiff was in the operating room from 9 a. m. until 4:30 p. m., that from 14 to 17 pints of blood were necessary for transfusion purposes, and that he weighed 185 lb. (83.9 kg.) when he entered the hospital and 94 lb. (42.6 kg.) when he left. When pressed by the plaintiff for an explanation of what happened during the operation, the resident-defendant gave as his only comment, "I played hell; that is what happened."

The decisive question, said the Supreme Court, is whether the evidence was sufficient to take the case to the jury. It appeared from the evidence that at all times material to this litigation the resident-defendant was an agent, servant, and employee of Duke Hospital and was acting within the scope of his duty as such agent. Therefore, if the resident-defendant was guilty of actionable negligence, such negligence is imputable to the hospital, and both are liable. The plaintiff contended that the evidence supported many inferences of negligence, among which are these:

(*a*) That the resident-defendant, without the plaintiff's permission, made haste to perform a serious operation, without having first obtained a fixed and definite diagnosis and although there was no necessity for such operation.

(*b*) That the resident-defendant should not have undertaken such a serious operation without first determining that there was available in the hospital a more experienced and capable surgeon upon whom he could call for consultation and aid in case of difficulty.

(*c*) That the resident-defendant extended the operative procedure too long and neglected to call for experienced surgical aid when he encountered a situation requiring skill outside the scope of his experience and beyond the range of his training.

(*d*) That the severe damage done to the plaintiff's venal structure by the resident-defendant resulted in so much loss of blood that another doctor summoned was unable to repair the damage, but directed his attention immediately toward saving the plaintiff's life, with the result that the plaintiff survived but suffered disastrous results.

(*e*) That the resident-defendant performed a defective amputation of the plaintiff's left leg.

(*f*) That the resident-defendant's statement to the plaintiff, "I played hell; that is what happened," indicated a consciousness of carelessness in the performance of the operation.

We are constrained to agree with the plaintiff, said the Supreme Court, that whether the resident-defendant proceeded with that degree of ordinary care required of him under the circumstances and conditions shown by the record was a question of fact for the jury. Hospitals and members of the medical profession are held in high esteem and in most cases enjoy the general affection of the public. They are, of course, entitled to every reasonable consideration, but there should not be drawn around them unnatural or artificial immunities to shield them against acts of negligence. They are not guarantors of effective cures or of perfect operative results. Nevertheless, the law of negligence holds a physician or surgeon liable for an injury to a patient proximately resulting from a want of that degree of knowledge and skill ordinarily possessed by other members of his profession, or for a failure to use reasonable care and diligence in the practice of his art, or for his failure to exercise his best judgment in the treatment of his patient. The Supreme Court expressed no opinion as to the truth or falsity of the evidence, but reached the conclusion that the permissible infer-

ences were such as to make the issue of liability one for the jury.

Accordingly the judgment of nonsuit in favor of the resident and the hospital was reversed. *Waynick v. Reardon, et al., 72 S. E. (2d) 4 (North Carolina, 1952).*

MEDICAL FILM REVIEWS

Enzyme Therapy with Varidase: 16 mm., color, sound, showing time 18 minutes. Prepared by W. H. Lutz, M.D., and M. B. Donaldson, M.D. Produced in 1952 by Fordel Films, New York, for and procurable on loan from Lederle Laboratories Division, American Cyanamid Company, 30 Rockefeller Plaza, New York 20.

This is a report-type film demonstrating the use of streptokinase-streptodornase (Varidase) in various types of chronic ulcers, burns, certain complications of peripheral vascular disease, infected maxillary sinuses, hemothorax, empyema, pilonidal cysts, and osteomyelitis. The action of the two principal enzymes in Varidase, streptokinase to bring about indirectly the liquification of fibrin and streptodornase to liquefy the nucleoprotein of purulent exudates, is briefly described. This approach, using enzymes to reduce the viscosity of undesirable clotted blood and exudates and to help promote drainage, is presented as an adjunct to known medical and surgical measures. Mechanical methods of applying the enzymes are presented briefly, and where possible the course of wounds treated is demonstrated. The limitations in this product are not adequately explained, so that in some instances the intelligent use of the product would require study of the firm's more comprehensive literature in connection with the product. The photography, particularly the close-ups of the lesions, is very well done. It is well organized, and the narration is excellent. This film would be of interest to general practitioners and surgeons for information as to the applications of this drug.

Pneumonectomy: 16 mm., color, sound, showing time 19 minutes. Prepared by Evarts A. Graham, M.D., Barnes Hospital, St. Louis. Produced in 1951 by and procurable on loan from Davis & Geck, Inc., 1 Casper Street, Danbury, Conn.

In this film a complete pneumonectomy is shown from the opening incision to the closure of the wound. This is standard procedure and is done by many surgeons throughout this country and in other lands. It is for that reason, perhaps, that the technique developed by Dr. Graham should be of particular interest to medical students and general surgeons as well as those who specialize in thoracic surgery. Throughout the operation each step is explained and the reason given for the choice of the particular technique or material used. The necessary steps for removal of the lung are clearly shown, and, when the lung is finally removed, the closed hilum and the complete remaining pleural surface are seen. It is an excellent demonstration of the combined use of visual material with medical lecture. The observer, while observing in the movie the operative technique, here gets the value of the tremendous experience in thoracic surgery that is Dr. Graham's and all of the advantage of his ability to explain clearly what he is doing. The photography is excellent. This film would be extremely valuable in the education of medical students, and it would be more valuable to general surgeons who may do occasional thoracic surgery. As a review for those engaged in the practice of thoracic surgery, it can also be recommended, although, doubtless, each surgeon's experience may lead him into variations of technique.

Technique of Horizontal Lateral Radiography of the Hip in Children: 16 mm., color, sound, showing time 8 minutes. Prepared by James C. Barnett, M.D., St. Charles Hospital, Brooklyn. Produced in 1952 by Campus Films, New York, and procurable on loan from James C. Barnett, M.D., 168 Clinton Street, Brooklyn 1.

This film demonstrates a technique for taking horizontal lateral roentgenograms of the pelvis in children. It provides a method of viewing the lateral aspect of the pelvis, and particularly the acetabulum, in a plane perpendicular to the usual anteroposterior plane. The child is placed on a special wooden support that raises him some distance above the x-ray table. The technique for taking the films is well demonstrated with the aid of a cooperative patient. Several excellent examples of films taken by this technique are demonstrated. They show good bone detail. The film makes no attempt to show the variations in contour of the acetabulum in various age groups in normal subjects and almost makes no attempt to show the various pathological conditions that might be encountered. It should be pointed out that the positioning of the child requires a cooperative patient who will remain quiet in a rather awkward position and that, in the case of apprehensive or crying children, films of good quality can rarely be obtained. The photography is clear and demonstrates the technique very well. The sound quality is good. There is no doubt that a technique for obtaining films of good quality in the lateral plane is very much needed, and this demonstrates a technique that may be extremely useful in selected cases. The film will be of interest to orthopedists, radiologists, and x-ray technicians.

Physical Rehabilitation: 16 mm., color, sound, showing time 27 minutes. Prepared by Christine K. Kline, Idaho State Elks Convalescent Home. Produced in 1953 by Film Originals, Boise, for and procurable on loan or purchase ($207.00) from Idaho State Elks Convalescent Home, Boise.

This film describes particularly the techniques of physical therapy and occupational therapy employed in a rehabilitation center. While the film is quite similar to a number of other films on physical rehabilitation and while the medical aspects as well as the vocational rehabilitation aspects are minimized, nevertheless, the descriptions of the methods of physical therapy are well presented. Although there is some description of occupational therapy, the major portion of the film deals with physical therapy and especially with the methods of obtaining ambulation in severely disabled paraplegics and patients having poliomyelitis or cerebral palsy. The theme of the film is built around one man who is finally returned to work, but many other patients are shown during the course of the film. The theme "that physical rehabilitation is no luxury item but a practical, economical process" is well sustained. The photography and narration are very well done. The film should be of considerable local interest and can be shown to laymen, as well as to physical therapists, occupational therapists, and physicians interested in rehabilitation.

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

BUSINESS IN MEDICINE

If one were called on to summarize the most important measures that will ease the strain on the doctor, please his patients, and result in better public relations for the physician and the entire medical profession, the following points should come to mind: Maintain adequate space and facilities to treat all patients. Employ adequate, qualified personnel. Explain medical fees and other medical costs in advance. Never overcharge and never undercut. Give the best medical service possible. Set fees fairly. Reduce or cancel fees when circumstances warrant special consideration. Help save the patient money when possible. Itemize statements. Send bills regularly. Offer long-term installment plans to patients who have difficulty in paying. Promote the use of voluntary health insurance plans; cooperate with insurance companies and patients in insurance details. Get adequate information on a patient's first visit. Follow through on collections. When selecting a collection agency, make certain it operates in an ethical fashion and meets the standards of the medical profession.

These suggestions do not require the physician to revolutionize his practice, and they do have great public relations significance. The main reason for putting efficiency into the practice of medicine and emphasizing the importance of the business side is to help the doctor devote more time to the scientific—and human—side of his practice. Medicine has a business side, but medicine can never become a business.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Etiology of Cardiac Enlargement in Coronary Occlusion, Hypertension, and Coronary Artery Disease. A. M. Master. Am. Heart J. **47**:321-329 (March) 1954.

Enlargement of the heart in patients with coronary occlusion has hitherto been generally attributed to hypertension. This opinion was based on erroneous definitions of hypertension, since the variations of blood pressure in different age groups and in the sexes were not taken into account. Master and associates recently analyzed the blood pressure of many thousands of working persons between the ages of 16 and 65 years. With these newly established limits of hypertension, the author studied 500 men and 100 women between the ages of 16 and 65 years with coronary occlusions in an attempt to determine the causation of cardiac enlargement in these patients. Of the 500 men, 136 had hypertension, 332 had normal pressure, and 32 had borderline cases. Seventy-seven (15.4%) of the 500 had definitely enlarged hearts. Of the 77, 29 had hypertension, 45 had normal blood pressure, and 3 had borderline cases. Thus the incidence of cardiac enlargement in the 136 patients with hypertension was 21.3%, and in the 332 with normal blood pressure it was 13.6%. At least 27 of the 45 patients with normal pressure and large hearts had never been in heart failure. Heart failure, therefore, is not an essential factor in the production of cardiac enlargement in those with normal blood pressure. Of the 29 patients with hypertension and cardiac enlargement, 8 had a ventricular aneurysm; of the 45 patients with normal blood pressure and cardiac enlargement, 16 had a ventricular aneurysm. Hypertension, therefore, does not predispose to ventricular aneurysm any more than normal blood pressure does. Cardiac enlargement was more frequent in the hypertensive patients in each age group. It seems clear that hypertension is a factor in the causation of enlargement of the heart in persons with coronary occlusion. The incidence of enlargement of the heart increased sharply at the age of 55 in men with normal blood pressure. Age, with its associated coronary sclerosis, is also an important cause of cardiac enlargement in coronary occlusion. When both hypertension and coronary sclerosis (the aging process) occurred simultaneously, the incidence of cardiac enlargement was highest—almost two-fifths of the cases of coronary occlusion. Among the 100 women studied, 44 had enlargement of the heart. The ratio of cardiac enlargement among the women was almost three times that among the men—44% to 15.4%. This higher frequency of cardiac enlargement was observed among the hypertensive group—women 52.2% and men 21.3%—as well as among those with normal blood pressure—women 23.8% and men 13.6%. Hypertension occurred in 71% of the women and in 27% of the men. Since 71% of the women with coronary occlusion had hypertension and since 44% had cardiac enlargement, hypertension appears to be an important cause of enlargement of the heart in women. In women with coronary occlusion, the incidence of cardiac enlargement was highest in the age group between 60 and 64 years when coronary sclerosis and hypertension both occurred oftenest. Since 21% of the women had a normal blood pressure and since 23.8% of these had an enlargement of the heart, coronary sclerosis alone also appears to be a cause of cardiac enlargement. The combination of hypertension and coronary sclerosis is the most important factor in the causation of enlargement of the heart in patients with coronary occlusion.

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Haemodynamic Effects of Hexamethonium Bromide in Patients with Pulmonary Hypertension and Heart Failure. V. H. Wilson and K. J. Keeley. South African J. M. Sc. **18**:125-129 (Dec.) 1953.

Wilson and Keeley considered using hexamethonium bromide to relieve pulmonary hypertension and the consequent strain on the right ventricle in patients with pulmonary edema due to mitral valve disease and in patients with pulmonary heart disease after thoracic surgery. By relaxing the autonomic arteriolar tone, however, the possibility exists of increasing the pulmonary capillary pressure and thereby aggravating or precipitating pulmonary edema. This investigation is concerned with the effects of hexamethonium bromide on the circulation in patients with serious heart disease and marked pulmonary hypertension. The pulmonary and systemic arterial pressures were recorded and samples of blood obtained from the pulmonary artery and the femoral artery and vein during venous catheterization of the heart with the patient at rest in the supine position. Sedation was achieved with pentobarbital. It was feared at first that an oxygen deficit might occur when the circulation was changed by hexamethonium bromide. Subsequent experience showed that this was unlikely to occur. Hexamethonium bromide was given intravenously. If the dose employed produced no effect on the circulation within five minutes, further quantities were administered, repeatedly if necessary. This study differed from previous ones not only in the clinical material treated, but also in the doses of hexamethonium bromide given. The effective total dose in adults ranged from 25 to 350 mg., and in one case 1,230 mg. was given in divided doses over 75 minutes with effect on the pulmonary pressures but without untoward effect on the patient's condition. The development of disturbed respiratory rhythm was the sign of excessive dosage. The variable effect on cardiac output previously described by Werkö and associates and by Gilmore and co-workers was confirmed, and the authors agree that the pulmonary arterial pressure falls to a greater extent than can be accounted for by a decrease in cardiac output. They also conclude that in patients with pulmonary hypertension hexamethonium bromide is likely to reduce both the systemic and the pulmonary arterial pressures proportionately. As no serious circulatory disturbance was noted, hexamethonium bromide may be of value in reducing pulmonary hypertension in patients with severe right ventricular failure.

Effect of Intravenous Colchicine on Acute Gout. J. S. Davis Jr. and H. Bartfeld. Am. J. Med. **16**:218-219 (Feb.) 1954.

In the past the parenteral treatment of gout with colchicine consisted of intravenous injection of the contents of a 20 cc. ampul containing 0.65 mg. of colchicine, 1 gm. of sodium iodide, and 1 gm. of sodium salicylate. Since it was thought that some of the side-effects might be due to salicylate or iodide sensitivity, a modification of the standard form was prepared. It contained 0.65 mg. (1/100th grain) of colchicine in distilled water in 1 cc. and 2 cc. ampuls. This modified preparation was administered to 16 patients. A rapid response was noted in most instances. The authors feel that this mode of colchicine administration deserves a more extensive trial.

Family Studies on Brucellosis. W. W. Spink. Am. J. M. Sc. **227**:128-133 (Feb.) 1954.

Of 204 patients with brucellosis studied in the clinics of the University of Minnesota between 1937 and 1953, presence of the organisms was proved on cultures in 119 cases and by serologic tests in 85; of the 85, cultures did not support the diagnosis. Of the 119 patients with positive cultures, the disease was caused by Brucella abortus in 102, Br. suis in 12.

and Br. melitensis in 5. While Br. abortus is the least invasive of Brucella organisms, it causes approximately three-forths of the cases in human beings in the United States. Of the 204 patients, 153 were men, most of them between the ages of 20 and 40 years. That brucellosis caused by Br. abortus is a sporadic disease was clearly indicated by the fact that, in the course of the author's 16 years study in an endemic area, there were only nine families in which additional evidence of human infection was acquired. Eight of the nine patients with primary cases had positive blood cultures due to Br. abortus, while in the ninth there was undoubted clinical and serologic evidence of the presence of active disease. Although evidence of infection was present in 17 additional members of these nine families, there was only one additional case of apparent illness in each of the nine families. Information on the mode of infection suggested that contact with infected animals and their contaminated environment may have been just as important as the ingestion of unpasteurized milk from cows with Bang's disease. In only one family was there unqualified evidence that the ingestion of raw milk was the sole source of the disease. There were three father-son combinations in which Br. abortus was isolated from the three fathers and the three sons, and all six had evidence of active brucellosis. This family study of brucellosis emphasizes a common feature of communicable disease in that a considerable number of persons may be exposed to brucellosis, the tissues of many will have been invaded by the micro-organisms, but relatively few will manifest evidence of illness. The study accentuates the importance of contact with infected animals or their immediate environment in the acquisition of the disease, compared to the ingestion of contaminated milk as the cause of illness. Most persons appear to tolerate exposure to small numbers of Brucella organisms without ill effects, but there is the occasional person whose tissues are readily invaded, and disease results making individual susceptibility to it impressive.

Pulmonary Emphysema Treated by Intermittent Positive Pressure Breathing: Clinical Study. H. G. Trimble and J. Kieran. J. Am. Geriatrics Soc. **2**:102-107 (Feb.) 1954.

Trimble and Kieran say that intermittent positive pressure breathing has been used with increasing frequency in recent months in the treatment of pulmonary emphysema and its concomitant diseases. The idea behind its application is that it increases the efficiency of aeration of the lung, promotes bronchial drainage, and, if a bronchodilator such as a nebulized aerosol is added, helps correct that portion of the bronchial narrowing due to reversible bronchospasm. The authors have used this treatment for about 18 months, but in the beginning some of the patients may have been poorly chosen, and others, for various reasons, have not continued the prescribed treatment. The 35 patients considered here have been followed for periods of from two weeks to several months. They have been very cooperative and have been under close observation. All the adjunctive treatments for pulmonary emphysema and its allied conditions were used when indicated. In administering intermittent positive pressure 100% oxygen is inhaled through a Bennett valve, which allows oxygen flow into the lungs under regulated inspiratory positive pressure of up to 20 cm. of water. As inspiration is completed, the valve turns, the oxygen stream is shut off, and expiration is entirely passive. The patient chooses his own rate and depth of breathing. A mask is used. A bronchodilator aerosol, isopropylarterenol (Isuprel), is nebulized into the oxygen stream in most of the patients. Two of the 35 patients received two courses of treatment, making a total of 37 observations. Pulmonary emphysema was found in 27 cases. Of these, 11 had chronic recurrent bronchial asthma, 2 had advanced silicosis, and 2 had bronchiectasis concurrent with pulmonary emphysema. The other diagnoses were chronic bronchitis, five cases; arteriosclerotic heart disease, two cases; pulmonary fibrosis, one case; peripheral vascular disease, one case; and uremia, one case. Dyspnea was present in 31 of the patients and was improved in 24 of them; cough that was present in 32 improved in 22; and improvement in the sputum was noted in 20 of 30 patients. The authors feel that their observations confirm previously published reports and show that improvement occurs in more than two-thirds of patients with pulmonary emphysema and with other chronic lung diseases involving problems of bronchial drainage.

Value of Certain Signs in the Presumptive Diagnosis of Infectious Mononucleosis. C. E. Bender. Journal-Lancet **74**:7-10 (Jan.) 1954.

Bender shows that, whereas numerous reports on mononucleosis attest to the bizarre syndromes found in this disease, Hoagland stressed the constancy of the basic picture of fever, malaise, pharyngotonsillitis, and adenopathy and suggested that the protean traits of the disease have been overemphasized. This view is in accord with Bender's experience. He describes certain fundamental signs he considers helpful in making the presumptive diagnosis of infectious mononucleosis. His observations were made on 410 students ranging in age from 17 to 33 years who were treated for mononucleosis at the Health Center of the University of Washington since January, 1946. Posterior cervical adenopathy was present in 99% of this series, and pharyngitis was present in 96%. Thus the presumptive diagnosis of infectious mononucleosis is warranted by the coexistence of these two basic features. When, in addition to adenopathy, the pharyngitis is characterized by the presence of a white tonsillar exudate, the diagnosis can be made with even more assurance. This alliance with either lid edema or a petechial palatal enanthem constitutes a syndrome almost pathognomonic of infectious mononucleosis.

Hypertrophy of the Pyloric Muscle in Adults. J. W. Stinson, A. V. Casillo and E. Harter. Pennsylvania M. J. **57**:139-142 (Feb.) 1954.

Five cases of pyloric stenosis due to hypertrophy of the pyloric muscle have been seen by the authors in patients from the third decade of life to 64 years; three of them, all in middle-aged to elderly women, are reported in detail. The patients were obese and suffered from cholelithiasis. In each case, the condition was diagnosed with difficulty because the possibility of it was not envisioned; two of the three patients each underwent an unnecessary operation. The symptoms of the defect are epigastric fulness, pain, vague discomfort, and vomiting. Roentgenography showed a 25 to 50% retention of barium after six hours. Hyperperistalsis or gastric dilatation is not usual, but the pyloric canal is significantly elongated and, while a diagnosis of ulcer is not unfrequently made, carcinoma from the roentgenographic viewpoint takes first place in differentiation. Disease of the biliary tract, especially if detected first, can easily confuse the picture. The clinical history may not be typical, but the roentgenographic appearance of the deformity is, and in most cases it is well supported by the history. The authors suggest that the possibility of hypertrophy of the pyloric muscle be kept in mind, especially if a patient with such a history is subjected to exploratory surgery.

Suprasternal Puncture of the Left Atrium for Flow Studies. S. Radner. Acta med. scandinav. **148**:57-60 (No. 1) 1954. (In English.)

A new technique of direct puncture of the left atrium, made from the suprasternal fossa through the space between the trachea and the aortic arch, was employed in five patients for studying the flow characteristics of the left atrium that are of primary interest for the surgical management of cardiac disease. With the patient in the supine position and with his head bent slightly backward and turned to the left, a special double needle is inserted with the aid of local anesthesia, without epinephrine, in the midline 3 to 4 cm. above the upper border of the sternum. The needle consists of an outer needle attached to a three-way tube and an inner needle that is inserted into the outer through this tube. The internal diameter of the inner needle is 0.25 mm., and the internal diameter of the outer needle is 0.60 mm. The external diameter of the outer needle is 0.80 mm. The sharp tip of the inner needle projects for about 2 mm. beyond the outer needle, which is obliquely cut and streamlined. The free length of the outer

needle is 165 mm. The three-way tube has one stopcock on each limb to permit infusion, aspiration, and pressure measurement through the outer needle. For recording pressures, its proximal straight limb is connected with a manometer. Before puncturing, a 1 cc. syringe is attached to the inner needle for flushing and aspiration. After insertion, the needle is directed along the anterior border of the trachea and posteriorly to the aortic arch that is felt pulsating at a depth of about 1 to 6 cm. below the suprasternal fossa. A slight digital pressure may be required to guide the needle into the desired space. Here the needle goes smoothly downward and, passing the tracheal bifurcation, it reaches a membranous and softly pulsating resistance at a depth of about 8 to 16 cm. This is punctured, and blood is aspirated through the inner needle to determine its position. Flow studies are made through the outer needle, after the inner one has been withdrawn. No complications were encountered. Although no premedication was given, the puncture was almost painless. The results obtained warrant the continued routine use of the method.

Spreading of Bornholm Disease in Germany. A. Windorfer and H. Schricker. Deutsche med. Wchnschr. **79**:205-208 (Feb. 5) 1954. (In German.)

The occurrence of epidemic pleurodynia, which first was observed in the Danish island of Bornholm (hence the name Bornholm disease), is not limited to this island or to the Scandinavian countries. This acute, febrile, infectious disease associated with severe muscle pains was endemic for a long time in the Northern regions of Germany. It also occurred sporadically since 1930 in more southern places. A definitely increased incidence of the disease was observed after the end of World War II. The first epidemic with about 5,000 recorded cases occurred in 1951. Approximately 41% of the 5,000 cases were observed in the northwestern part of Germany, 14% in the province of Hessen, and 45% in the southwestern part of Germany. It is safe to assume that the real number of cases exceeded considerably that of 5,000, since the clinical aspect of the disease is not yet known too well and an erroneous diagnosis had been made frequently. In 1952, the disease occurred only sporadically. A pronounced increase in the incidence of Bornholm disease in other European countries and in most of the overseas countries that were in close contact with Europe, occurred parallel with the spreading of the disease in Germany. Intensified and shortened communications between the civilized countries must be a contributing factor in the spreading of Bornholm disease. Many German refugees went to Denmark and Schleswig-Holstein and from there within the next years found their way into the other provinces of Germany and partly overseas. Dalldorf's observations suggest that other factors such as symbiosis and antibiosis with other micro-organisms also may play an important part in the spreading of Bornholm disease.

Diabetic Angiopathy: Specific Vascular Disease. K. Lundbaek. Lancet **1**:377-379 (Feb. 20) 1954.

Before the introduction of insulin, the number of diabetics with vascular diseases was relatively insignificant. During the last decennium, however, because of the survival of the many patients who would have died without insulin, vascular disease in diabetes mellitus has become a major problem. This clinical syndrome is composed of four important organ lesions—retinopathy, nephropathy, coronary disease, and occlusive vascular disease of the lower extremities. To these lesions Lundbaek adds diabetic neuropathy. He studied diabetic angiopathy in 234 patients who had had diabetes for from 15 to 25 years. He personally examined the 165 of the 234 who were still alive, and detailed information was obtained on all but a few of the dead patients. Diabetic retinopathy was found in 80% of the patients. Signs of renal disease were present in a fourth of the patients. Heart disease was common but was found exclusively in the elderly, that is, in two-thirds of the patients more than 60 years old. Occlusive vascular disease of the lower extremities was found in about a quarter of the patients (in half the patients over 60). Neuropathy (defined as loss of tactile sensibility, with or without other neurological abnormalities) was present in 5% of the cases. Arterial hypertension showed a very high incidence. In the patients over 50, it occurred in 52% of the males and 84% of the females. The serum cholesterol level was significantly raised in the younger patients. Increased capillary fragility was observed in about a third of the patients. Only a tenth of these patients were free of abnormalities of the kidneys, heart, eyes, or legs. The author raises the question, "Are these findings to be interpreted as manifestations of a specific diabetic vascular disease, or are they to be regarded as complicating disease—arteriosclerosis, atherosclerosis, medial sclerosis, diffuse arteriolar sclerosis, or any other more or less well-known and more or less well-defined vascular disease?" He presents points that favor the hypothesis of a specific diabetic vascular disease, a diabetic angiopathy, not identical with any of the above-mentioned nosological entities. For instance, retinal changes of sanguinolent spots, phlebopathy, vascular proliferations, and pigmentopathy are specific to long-standing diabetes and are not found in nondiabetic patients with atherosclerosis, medial sclerosis, or diffuse arteriolar sclerosis. In comparing the lipid content of the coronary arteries in diabetic and nondiabetic patients with angiopathy, it was found that somewhat less calcium, more cephalin, and probably less lecithin were found in the arteries of diabetics. A difference was found also in the phospholipid-cholesterol ratio. The author feels that it is important that the specificity and the peculiar features of the vascular disorder in diabetics be clearly recognized.

Treatment of Subacute Bacterial Endocarditis and Chronic Progressive Polyarthritis with Intra-Arterial Injections of a Streptococcic Anavaccine. M. Debray, M. Gibelin, B. Malapert and C. Rovillain. Presse méd. **62**:183-185 (Feb. 6) 1954. (In French.)

Localization of the histological lesions of subacute bacterial endocarditis in proximity to the arterioles or even within their walls, together with the fact that the valves on the left or arterial side of the heart are electively affected by the disease, warrant the belief that the underlying rheumatic allergy is an allergy of the arterial tissues. The allergic reactions are apparently due more to metabolites resulting from the action of a Streptococcus on the vasculoconnective tissue, of the tonsils, for the most part, or of the upper respiratory or digestive passages, than to the bacteria themselves. Efforts to desensitize the arterial tissue with intra-arterial injections of a streptococcic anavaccine and thus render it refractory to the action of the allergen produced lasting results without recurrences in patients who were adequately treated in 1947, 1948, and 1949 and who later received the necessary booster doses. The results obtained in patients treated in 1950 and since cannot be accurately evaluated, because several have been lost to follow-up. Two of the four deaths known to have occurred among these patients were in young girls with mitral stenosis in whom complete arrhythmia had appeared before the treatment was started; the other two occurred in patients who responded to the original injections but who did not receive the booster doses. Patients with chronic progressive polyarthritis have also derived substantial benefit from this method of treatment, but a final determination of its value in this condition cannot yet be made. The innocuousness of the procedure depends to a large extent on the use of the arterial route; except for joint pains and transient fever in some patients, the injections, of which from 20 to 25 are given according to an individualized schedule, are well tolerated. The period that elapses before improvement becomes apparent varies with each patient, and it is only toward the end of the treatment that cure is established. Five additional injections must be given one or two years later in order to prevent recurrences.

Effect of Cortisone on Serous Exudates, Especially of Tuberculous Origin. M. Linquette, M. Goudemand and P. Warot. Presse méd. **62**:168-170 (Feb. 3) 1954. (In French.)

The accidental discovery that cortisone has a beneficial effect on serous exudates led to its use in patients with tuberculous pleurisy. Rapid resorption of the exudate was secured in most cases, and, as usual, the patient's general condition was greatly improved. None of the patients had pulmonary lesions, and all

the standard precautions required in connection with the use of hormone therapy were observed. The possibility that the symptomatic improvement resulting from the administration of cortisone may be offset by exacerbation of the tuberculous process makes it advisable to give antibiotics (streptomycin) and isoniazid at the same time. The best results were obtained when the antibiotics were combined with local injections of hydrocortisone in doses of from 50 to 100 mg. daily. Use of the local route lessens the danger of tuberculous exacerbation by making it possible to give smaller doses of the hormone for a shorter period of time (usually from 4 to 10 days). Cortisone therapy should not be prescribed routinely for tuberculous serositis, but in patients with abundant, recurrent exudates the symptomatic improvement obtained by its use justifies whatever slight risk it may involve.

Dangers of Polypharmaceutical Preparations Containing Folic Acid. C. P. Lowther. Brit. M. J. **1**:564-565 (March 6) 1954.

Lowther emphasizes the difficulties that may arise when antianemia treatment is undertaken without proper investigation of the case and with preparations of the "blunderbuss" type. The 46-year-old woman whose history is presented had a low hemoglobin level, and a course of iron therapy was recommended. Her family physician gave her a proprietary preparation of iron, and her general condition improved greatly. Her appetite returned to normal and her weight increased, but the stiffness of her legs began to worsen rapidly. Later she was found to have a spastic paraplegia with great muscular weakness, bilateral extensor plantar responses, and complete loss of posterior column sensation in both legs. A diagnosis of subacute combined degeneration of the cord was made, and treatment with Anahaemin, a liver injection preparation, and vitamin B_{12} was started. Hematological and neurological improvement was rapid, and five weeks later the patient was walking well enough to continue treatment as an outpatient. It was found that she had been treated originally with capsules containing iron, vitamin B, extract of raw liver, and folic acid. The amount of folic acid present in each capsule was 1 mg., and she had consumed 3 mg. of folic acid daily for 38 days. The arguments against the inclusion of folic acid in polypharmaceutical preparations are summed up as follows: 1. Folic acid temporarily improves the blood picture and may restore it to normal. The physician is then faced with a disease of the central nervous system, the misdiagnosis of which is likely, as subacute combined degeneration of the cord without anemia is very uncommon. 2. The relief of the general symptoms of pernicious anemia often reassures the patient and the physician and masks the deterioration of the nervous system. 3. Folic acid deficiency occurs infrequently, and there is no need for this substance in multivitamin or iron preparations. 4. The answer to the question of whether folic acid actually precipitates cord degeneration is still uncertain.

Perigastritis Deformans After Diseases of Left Lung and Pleura. E. Minder. Schweiz. med. Wchnschr. **84**:189-193 (Feb. 6) 1954. (In German.)

The occurrence of perigastritis deformans after disease of left lung and pleura is reported in one man and three women between the ages of 38 and 63. All four patients showed the same course of the disease characterized by a primary pleuropulmonary condition (bronchiectasis of left lower lobe, left metapneumonic pleural empyema, pleurisy on the left side, and capillary bronchitis with enlargement of the left hilar nodes, respectively) with complete absence of gastric complaints. A disease of the stomach with the subjective and objective symptoms of perigastritis, such as pain, spastic dyspepsia, and emaciation, frequently associated with palpitation, sweating, and regurgitation and vomiting of small amounts of gastric contents in the absence of biliary contents, developed gradually after an interval of freedom from complaints for from a few months to several years. Roentgenologic and gastroscopic examinations revealed adhesive changes in the cardiac portion of the stomach resulting in fixation of the fundus ventriculi to the diaphragm with partial torsion of the stomach, formation of pseudodiverticulums or cascade stomach, respectively. The deformities were partly associated with pronounced functional disturbances. This gastric disease is a typical sequel of the primary pulmonary or pleural process. Active tuberculosis could not be demonstrated in any of the patients at the time of their examinations. A preceding pulmonary or pleural disease in the left portion of the thoracic cavity may, therefore, be considered as the essential causative factor in this specific form of perigastritis deformans.

Tuberculous Sciatica. R. Kaufmann. Semaine hôp. Paris **30**:564-567 (Feb. 6) 1954. (In French.)

Tuberculous sciatica is the symptom of a primary infection that has developed in the pelvic lymph nodes at some point near the sciatic nerve, that is, an epiphenomenon near a specific focus of infection. It does not evolve by itself, frequently becomes attenuated, and may be found again only with a history of a former epitubercular infiltration. It occurs in two forms, infectious and post-traumatic. It can be diagnosed by tomography; patches of vertebral osteolysis, discal "pinching," decalcification of the sacroiliac joint, or changes in the trochanter may be observed. The author reports nine cases, in eight of which the presence of Koch's bacillus was verified. Traction and manipulations improved four of these patients, but in all, except the one in whom tubercle bacilli were not found, an abscess appeared at some point in the course of the illness. Proper treatment of the condition consists in surgical excision of the tuberculous nodes. Allowing them to remain constitutes a risk to the patient of osteoarticular degeneration, Pott's disease, or sacrocoxitis.

Action of Folic Acid and Vitamin B_{12} on Hemoglobin Metabolism. L. D'Ambrosio and M. Pugliese-Carratelli. Riforma med. **68**:93-97 (Jan. 23) 1954. (In Italian.)

The authors studied the effect of folic acid and vitamin B_{12} on the altered hemoglobin metabolism of patients with blood diseases. Thirteen patients with a primary or secondary disease of the blood were given 20 mg. of folic acid daily for 10 consecutive days, and six patients also with a primary or secondary disease of the blood were given 20 mcg. of vitamin B_{12} daily for one week. There was, in almost all the patients, an increase in the number of erythrocytes and the amount of hemoglobin, a decreased elimination of bilins in the feces and the urine, diminished levels of bilirubin in the blood, and a tendency of the hemolytic index to return to normal. The authors believe that the improved hemoglobin metabolism was due to the direct beneficial action of the two preparations on hemopoiesis that was restored to normal thus checking the increased hemocatheresis. The improvement may have resulted also partly from their action on cellular metabolism and protein metabolism with a consequent beneficial effect on liver function.

SURGERY

Mediastinal Tumors. O. C. Brantigan, C. Y. Hadidian and G. Schimert. M. Ann. District of Columbia **23**:71-84 (Feb.) 1954.

Between 1941 and 1951, 60 patients between the ages of 4 months and 72 years with mediastinal neoplasms were studied. Although anatomically the mediastinum is fairly well defined, a question is raised concerning the paravertebral gutters where many neurofibromas occur. Anatomically these regions are not a part of the mediastinum, but clinically they are often considered to be so. In considering mediastinal neoplasms, tumors of the esophagus and trachea are usually excluded. Neurofibromas in the paravertebral region and certain substernal thyroids are included. Thus, the neoplasms of the 60 patients were classified as those arising from lymphatic tissue in 28, from nerve tissue in 7, from embryonic tissue in 9, from thyroid tissue (substernal thyroid) in 8, and 8 were considered undiagnosed mediastinal neoplasms. In the authors' series there were no neoplasms of connective tissue origin or of endothelial or mesothelial origin, but such tumors were recorded by other workers. Of the 28 patients with neoplasms arising from lymphatic tissue, 14 had secondary carcinoma of the lymph nodes, 6 primary lymphosarcoma of the lymph nodes, 3 Hodgkin's disease of the lymph nodes, 3 thymic neoplasms, one cyst of the thoracic duct, and one acute lymphatic leukemia of

the lymph nodes. Of the seven patients with neoplasms arising from nerve tissue, four had neurofibroma, one sympathogonioma, one ganglioneuroma, and one tumor of the vagus nerve. Of the nine patients with neoplasms arising from embryonic tissue, three had teratoid tumor, three dermoid cyst, and three other cysts. Twelve of the 60 patients had thoracic exploration; of the 12 patients lymphosarcoma was diagnosed in one, metastatic carcinomas in 7, and in 4 patients the exact diagnosis was indefinite despite pathological study. Four patients died as a result of the exploration. In 25 patients the mediastinal tumor was extirpated surgically, and in this group two deaths occurred. In the remaining 23 patients the diagnosis was determined by biopsy of the distant nodes, a trial of roentgen therapy, or autopsy. For solitary mediastinal neoplasms surgical extirpation is the treatment of choice; in primary malignant disease of the lymph nodes roentgen therapy is the method of choice.

Skin Grafts in Treatment of Hernia and Eventration of Abdominal Wall: Results in 103 Cases. C. C. Moraes and F. M. Ribeiro. Rev. brasil. cir. **26**:273-277 (Sept.) 1953. (In Portuguese.)

Whole skin grafts were used in the treatment of primary or recurrent hernia and for eventration of the abdominal wall in 103 cases. Penicillin was given to all patients for three days, one before and two after the operation. The graft was taken from the skin, cleaned of fatty tissue, and kept in isotonic sodium chloride solution with penicillin during the operation. It was grafted by Mair's technique and followed by local penicillin infiltration. In cases of either umbilical hernia or eventration of the abdominal wall, the technique was modified according to the possibilities: (1) as a reinforcement of the wall made up by overlapping the hernial borders, as in Mayo-Lecene's procedure, (2) as a cover for the hernial ring with borders as near to each other as possible, and (3) as a bridge over a gap on the hernial area. The graft was fixed under great tension. Immediate complications were transient local infection in two cases, fistula after local infection in two cases, and lobar pneumonia in one case. The fistula was closed by surgical débridement. The wall over the hernial area showed no difference between the patients who remained in bed for a week after the operation and those who remained in bed four or five days after it. Follow-up observations were made in patients in three groups. The first group included 71 patients who had had the operation more than three years before. The other groups of 17 and 15 patients, respectively, included patients who had had the operation between six months and a year or three and six months before. Recurrence took place in one patient (0.9%) of the first group. This patient had had two previous operations followed by recurrence. The authors conclude that whole skin grafting gives the best results in hernia and eventration of the abdominal wall.

Indications for and Results of Pulmonary Valvulotomy (Brock's Operation) in the Various Types of Pulmonary Artery Stenosis. P. Soulié and P. Vernant. Semaine hôp. Paris **30**:607-617 (Feb. 10) 1954. (In French.)

The authors discuss the problems involved in the treatment of the two major types of congenital cyanosis, the tetralogy and the trilogy of Fallot. They feel that the Blalock-Taussig anastomosis and Brock's valvulotomy complement rather than oppose each other, since each has a different indication. Brock's operation should be used in the trilogy and Blalock's in the tetralogy. A correct differential diagnosis between these two assumes particular importance, and the physician must be able to recognize their atypical forms as well as their typical ones, in order to recommend the proper surgery. In the trilogy, when the pulmonary artery is stenosed at its orifice, pulmonary valvulotomy would seem to be the ideal intervention because the difficulty is predominantly mechanical, involving the burden placed on the right ventricle by the obstacle. In the tetralogy, on the other hand, the mechanical difficulty is not as important as the danger of anoxia, and the stenosis covers a greater area and, therefore, is not so accessible to direct attack. Besides, results with the Blalock-Taussig procedure have been excellent, with low mortality.

Controlled Hypotension by the Bleeding Method in Operations for Intracranial Meningiomas. J. Gardner and A. Ling. Surg., Gynec. & Obst. **98**:343-346 (March) 1954.

Gardner and Ling point out that in the experimental animal a method of removing, storing, and replacing arterial blood was developed by Kohlsteadt and Page. The application of this method to a patient undergoing operation was first described in 1946. The method of Page was modified by Hale for the purpose of reducing blood loss in patients undergoing operation for intracranial meningiomas. Between April, 1946, and February, 1953, this method, which has been called the "Page procedure," has been employed at the Cleveland Clinic in 161 operations. One hundred six of these were craniotomies, of which 46 were for intracranial meningiomas. Since the meningioma represents a benign and, therefore, presumably curable lesion, the authors believe that the results with this lesion offer the best index as to the value of the Page procedure. In these 46 cases of meningioma, there were four postoperative deaths. The average postoperative hospital stay was 13.4 days. Fifteen patients in this group did not require the use of donor blood. In a parallel series of 44 operations in which the procedure was not employed, there were six deaths. The latter series consisted of patients in whom the problem of hemostasis appeared less serious, and the procedure, therefore, was not deemed necessary. The average postoperative hospital stay was 16.3 days. Three patients in this group did not require the use of donor blood. The authors stress that during this procedure the patients are not in shock. With the blood pressure reduced to 70 or 80 mm. Hg. with the patient under thiopental (Pentothal) anesthesia, there is relatively little pulse acceleration and the patient's skin is pink, warm, and dry. The average amount of blood removed is 1,500 cc. and the average fall in blood pressure is 33% below the preoperative level. Their experience leads them to suggest that the Page procedure is the most physiologic, the most certain, and the most readily controlled method of inducing hypotension during operation. It, however, is not the most simple. The use of any hypotensive method is a calculated risk requiring judgment and experience. In experienced hands and in properly selected patients, its use improves chances of survival.

End Results of "Disc Operations" in Industry. H. C. Voris. J. Internat. Coll. Surgeons **21**:198-204 (Feb.) 1954.

Low back pain has been a problem in industrial medicine since the first compensation laws were passed. Sometimes it is caused by one or more intervertebral disk protrusions in the lumbar region, but the patients with this condition are usually disabled because of subjective symptoms. The results of operations for protrusion of a lumbar intervertebral disk in 35 industrial patients are compared with those in 192 patients without liability but operated on in the same way. Spinal fusion was done in 49% of the first group and in 42% of the second. In the second group, 95% had good or fair results, with little difference between the patients who had fusion and those who did not. Although in the first group 88% of the results were good or fair, the majority (51% of the total) were only fair. That means that over half of these patients have not returned to their former work and, if working, are doing lighter work than before the operation. Significantly better results were obtained with fusion in the compensation cases, since slightly more than half of the patients with fusion returned to their former work or are doing work that is equally strenuous. The industrial patients are, for the most part, operated on not because they are bedridden with severe sciatica but because they are unable to continue their normal work. Accordingly, they resent postoperative pain and discomfort, which seems as bad to them as the preoperative pain. They are apt to exaggerate their symptoms, either consciously or unconsciously, because of the compensation involved. Their convalescence is prolonged because when they do return to work they are unable to limit their own activity, but must do the work assigned. Self-employed persons do much better in this regard. The author recognizes that it is difficult to individualize the management of industrial patients.

Nevertheless, in order to obtain the best results, the following program is essential. There must be a careful clinical evaluation of each patient, a thorough trial of conservative treatment, and careful attention to the psychological problems of each patient. Surgical intervention should be reserved for relatively stable, emotionally adjusted persons who fail to respond to adequate conservative treatment. Convalescence is carefully supervised and planned to return the patient to his occupation as soon as his condition permits.

Revascularization of the Myocardium by Cardiopericardiopexy: Clinical Results in Coronary and Rheumatic Heart Disease. A. N. Gorelik and S. Dack. J. Internat. Coll. Surgeons **21**:167-174 (Feb.) 1954.

In treating myocardial asthenia, the authors adopted the method of cardiopericardiopexy by magnesium silicate (talc U. S. P.) introduced into the pericardial sac. This converts the ischemic myocardium into a hyperemic myocardium through a long-lasting foreign body inflammation. The foreign body reaction and hyperemia stimulate the opening of the intercoronary anastomotic channels in the myocardium; these exist, but may be nonfunctioning. Furthermore, the hyperemia on the surface of the heart stimulates the growth of the telae arteriae adiposae. The generalized adhesive granulomatous pericarditis stimulates the formation of new collateral blood vessels between the pericardium and mediastinal tissues and the myocardium. The authors emphasize that adhesive pericarditis is not to be confused with constrictive pericarditis, which they have never encountered in either human beings or animals. Serial venous pressure readings and fluoroscopic study of the ventricular pulsations after cardiopexy have never shown any evidence of constrictive pericarditis. The term "granulomatous pericarditis" is used in contradistinction to "adhesive pericarditis"; the latter will not produce new blood vessels nor will it remain vascular for a long time. The authors' indications for cardiopericardiopexy are (1) arteriosclerotic heart disease with coronary insufficiency resulting in angina pectoris or congestive failure, (2) hypertensive heart disease with cardiac hypertrophy and myocardial failure, and (3) rheumatic heart disease with single or multiple valvular involvement, not suitable for commissurotomy. The contraindications are (1) acute heart failure not responding to medical treatment, (2) active or acute coronary disease as proved by acute changes in serial electrocardiograms, leukocytosis, or increased sedimentation rate, and (3) severe renal damage or renal insufficiency. Cardiopericardiopexy was used by the authors in the four years preceding this writing in 47 patients, 37 men and 10 women, with severe coronary insufficiency; the majority were over 50 years old. Evidence of previous myocardial infarction was present in 25 patients, marked cardiac enlargement in one-third of the group, and chronic congestive failure in 8 patients. The period of follow-up after operation ranged from three months to four years; all but 10 patients were followed for six months or more. The results of the operation were gaged by the effect on exercise tolerance, severity and frequency of anginal pain, signs of congestive failure, and ability to return to work or increase the amount of work. The clinical results were classified as excellent in 19 patients and good in 14. In seven instances the follow-up was too short for evaluation. Three patients died during or soon after the operation, and four died during the follow-up period. The authors believe that cardiopexy with magnesium silicate is the surgical treatment of choice in coronary heart disease because of its simplicity and consequent low mortality. Cardiopexy was performed in 18 cases of advanced rheumatic heart disease with congestive failure. The period of follow-up ranged from two months to over two years. The immediate operative mortality was four patients. Of the remaining 14, all but 2 have shown moderate to marked clinical improvement, as evidenced by exercise tolerance and diminution or complete disappearance of heart failure. It is pointed out that the high mortality rate is due to over half the patients' being in extremely poor condition because of their disease. They would have been classed in group 4, according to Harken's method of classification. The authors conclude that the good clinical results obtained with cardiopericardiopexy in patients with rheumatic heart disease draw attention to the importance of the state of the myocardium as well as the valvular deformity. Cardiac failure may be produced or accentuated by myocardial damage secondary to rheumatic myocarditis and fibrosis and by coronary insufficiency secondary to rheumatic or arteriosclerotic involvement of the coronary vessels in the presence of cardiac hypertrophy. Under such circumstances, increased coronary anastomosis after cardiopericardiopexy would be expected to improve myocardial function. This would aid the myocardium better to withstand the mechanical effect of the valvular lesion and to prevent or reduce the severity of congestive failure. The procedure should be done before the patient has reached the terminal stage of his disease.

Rheumatic Disorders Caused by Commissurotomy. P. Soulié, Y. Bouvrain, P. Fortin and others. Arch. mal. coeur **47**:49-59 (Jan.) 1954. (In French.)

Ten case reports are presented, describing reactions that occurred after mitral commissurotomies. In the six cases that the authors feel to be most representative, the reaction occurred between one and two months after surgery. The disorders were all of a rheumatic nature, with fever and arthralgia; their severity varied from a minor febrile episode lasting 10 days to a disease requiring the more or less complete immobilization of one patient for almost a year. Four of the patients had had rheumatic fever in childhood or young adulthood, with a time lapse between their disease and the commissurotomies of from 6 to 30 years. One patient had not had frank rheumatic fever for nine years, but had had several febrile episodes since that time. Two patients had had rheumatic episodes three and seven months, respectively, preoperatively. Three patients had never had rheumatic manifestations. The appearance of these reactions could not be equated with the difficulty of surgery, since some of the interventions were easily performed on valves that were still supple. The authors consider the interval of only a few months that existed in two cases between the last manifestation of disease and the commissurotomy to be insufficient, and they caution against operating too soon. They are however, at a loss to explain the reactions of the other patients. It is pointed out that the reactions influenced the results of mitral commissurotomy in no case. The usual drugs, salicylate, cortisone, and corticotropin, were generally successful in treating these reactions, though some of the severer ones were unyielding. The final outcome was favorable in all cases.

Triple Carcinoma of Large Bowel. W. M. Eagleson. Canad. M. A. J. **70**:185-186 (Feb.) 1954.

Eagleson presents the history of a woman, aged 64, who was hospitalized because of intermittent, left, lower abdominal pain that had been present for three weeks. At laparotomy a tumor was found measuring about 7 cm. in diameter and involving the midpoint of the sigmoid colon and invading the back of the uterus. A second tumor approximately 6 cm. in diameter filled the cecum, and a third, smaller, annular tumor was discovered in the hepatic flexure. A hemicolectomy on the right side and an end-to-end ileotransverse colostomy were followed by freeing the lesion in the sigmoid from the uterus and resecting it. The operation was completed by a subtotal hysterectomy and bilateral salpingo-oophorectomy. The patient went home on the 25th day. The lesions in the cecum and sigmoid colon were sessile, fungating, ulcerated tumors measuring approximately 6 cm. and 7 cm. in diameter respectively, while that in the hepatic flexure was a stenosing ulcer with a raised indurated margin, involving three-quarters of the circumference of the bowel. The author regards it as noteworthy that in several cases reported in the literature, as in this one, no lymph node involvement had occurred in the presence of multiple large tumors. This and statistical reports suggest that multiple carcinomas frequently have their origin in preexisting polyps. Multiple carcinomas of the colon are not uncommon, and this fact should be kept in mind when operating on any patient with carcinoma of the large bowel.

NEUROLOGY & PSYCHIATRY

Blocking of Cervical Sympathetic Ganglions in Treatment of Cerebral Embolism and Thrombosis. F. Rabboni. Riforma med. **68**:116-118 (Jan. 30) 1954. (In Italian.)

Rabboni treated 12 patients with hemiplegia secondary to cerebral thrombosis and 6 with heart disease in whom the hemiplegia was secondary to cerebral embolism by blocking bilaterally the superior cervical and the stellate ganglions. The latter were blocked according to the anterior approach of Leriche, the former according to Arnulf's technique. From 5 to 10 cc. of a 1:1,000 solution of procaine hydrochloride and a few drops of a 95% alcohol were injected into each ganglion on alternate days. In some severe cases these ganglions were blocked twice. The treatment brought a marked functional restoration to five patients, an evident improvement to six, while the condition remained unchanged in seven in whom the hemiplegia had been present for from one to two years. Because physical and medical treatment generally give poor results, Rabboni says that blocking of the superior cervical and stellate ganglions should be used for all patients with hemiplegia secondary to cerebral embolism and thrombosis. It should not be used, however, in patients in whom a cerebral hemorrhage is present. The best results are obtained in those patients in whom this treatment is instituted as soon as possible after the stroke occurs.

Localization of Intracranial Neoplasms with Radioactive Isotopes. W. B. Seaman, M. M. Ter-Pogossian and H. G. Schwartz. Radiology **62**:30-36 (Jan.) 1954.

Two hundred patients suspected of having organic neurological disease were studied with a highly sensitive scintillation counter used for the detection of radiation emitted by di-iodofluorescein containing I^{131}. After the intravenous injection of 0.25 mc. of the radioactive medium, the counter was centered over the patient's zygoma and was kept there until the counting rate reached a plateau, which usually took 15 to 20 minutes. Thirty-two positions on the skull were routinely surveyed, including 13 symmetrical positions on each side and 6 midline positions. The counter was placed directly on the scalp so that skin contact was maintained. Of 85 patients in whom intracranial lesions were verified by surgical intervention or necropsy, 65 had brain tumors and 20 had non-neoplastic lesions, including intracerebral hematomas, aneurysms, and abscesses. Correct localizations were obtained with the di-iodo-fluorescein technique in 30 patients (46%) with microscopically verified brain tumors and in 10 (50%) with non-neoplastic lesions. In the entire group of verified cases, a correct localization of a focal lesion or the correct demonstration of the absence of a focal lesion was made in 40 cases (47%). A focal lesion was diagnosed only if a differential in radioactivity greater than 10% could be repeatedly demonstrated. Failure to localize a tumor may be the result of an unfavorable location (subtentorial tumors) or of biological factors such as extensive necrosis and/or cyst formation that interfere with the basic mechanism of localization of the medium. The accuracy of the di-iodo-fluorescein studies was compared to that of the electroencephalogram in 50 patients. Results suggested that the two methods may be somewhat complementary so far as the localization of brain tumors is concerned. The clinical value of the di-iodo-fluorescein test is yet to be definitely determined. It is a useful screening procedure in selecting patients for further diagnostic studies.

Secondary Neoplasms of Central Nervous System and Meninges. P. C. Meyer and T. G. Reah. Brit. J. Cancer **7**:438-448 (Dec.) 1953.

Among 24,229 necropsies performed between 1909 and 1950 at the Institute of Pathology of the London Hospital, there were 216 cases in which the central nervous system, meninges, or pituitary were involved by secondary neoplasms. Carcinoma of the lung (bronchus) stands first with 117 cases. In one of these, only the head was examined, and so only 116 are considered in the further analysis. The brain itself formed the main site in the majority, that is, in 105 of the 116 cases. The pineal body alone was affected in one case. In seven cases the intracranial dura was infiltrated in continuity with metastases to the adjoining skull; in two of these, the neurohypophysis was infiltrated by a growth that, in one, extended to the third vertricle. In two cases the cerebral leptomeninges were diffusely infiltrated, the brain being secondarily involved by extension of this growth from the surface. In one instance the cord alone was involved by intrathecal growth that infiltrated the third and fourth thoracic segments but did not penetrate the dura. It was argued that this figure of 116 out of a total of 216 is inflated by reason of selective factors. These factors also depressed the total of metastases to the central nervous system due to mammary carcinoma (20 cases). From 1934 on the brain was examined in each of 303 cases of primary carcinoma of the lung, and cerebral metastases were found in 77 cases, or 25.4% of the total. It is reasonable, therefore, to conclude that such metastases occur in about 25% of all cases of primary carcinoma of the lung. No significant difference was found in the frequency of involvement of the right and left cerebrum, but there was a predilection for the cerebellum that remains unexplained. On histological examination the oat cell type of bronchial carcinoma was predominant, in conformity with its incidence in these primary growths as a whole.

An Evaluation of Conservative Treatment for Patients with Cervical Disk Syndrome. G. M. Martin and K. B. Corbin. Arch. Phys. Med **35**:87-92 (Feb.) 1954.

Many patients having a syndrome suggestive of lateral protrusion of a cervical intervertebral disk are referred to the section of physical medicine and rehabilitation of the Mayo Clinic for a trial period of conservative treatment. In an effort to evaluate the effectiveness of conservative management by means of an ambulatory program of physical therapy, including cervical traction, a follow-up study was done on 61 patients who were suspected of having protrusion of a cervical disk. This group included 42 men and 19 women seen between 1947 and 1950. The ages ranged between 20 and 70, the average being 45. The treatment included application of heat and massage as well as cervical traction. Short-wave diathermy utilizing an induction cable or radiant heat from a 250 watt reflector heat lamp was applied for 30 minutes. This was followed by deep stroking and kneading massage to the muscles of the neck, shoulder, and upper arm. Cervical traction was given by a physician using an overhead Sayre head sling with a spring scale mounted to indicate directly the poundage of vertical traction. The traction was applied while the patient was seated in a relaxed position. The traction was applied in varying amounts from 30 to 100 lb. (13.6 to 45.4 kg.), depending on the patient's tolerance and his ability to maintain relaxation of the cervical musculature during the application of the traction. The average pull was 60 lb. (27.2 kg.) and was applied from one to three minutes twice daily. Immediate results often included dramatic relief of pain. Forty-one (67.2%) patients had definite improvement during the initial period of treatment. Six months to five years after the initial period of treatment, 77.1% of the patients had definite improvement, 3.2% showed no change to slight improvement, and 19.7% of the patients required surgical treatment. The authors conclude that an ambulatory program of physical therapy including vertical cervical traction provides satisfactory treatment for the majority of patients suspected of having lateral protrusion of a cervical intervertebral disk.

Spinal Traction. R. Barbor. Lancet **1**:437-439 (Feb. 27) 1954.

Barbor describes the method of traction treatment for protrusion of an intervertebral disk that he has employed for the last four years. His aim was to prevent the patient from lying in bed for many weeks awaiting spontaneous reduction. With the aid of a traction couch, he obtains within a few hours the same effect obtained by several weeks in bed. The objects of the traction are (1) to render the posterior longitudinal ligament and the capsule of the intervertebral joint taut so that they exert direct centripetal pressure on the disk; (2) to produce a negative pressure inside the joint and thus

exert suction; (3) to increase the distance of the joint surfaces, thus allowing space for the protruded disk to slide back into place. The couch has a foundation of tubular steel that supports a flat platform covered with kapok and leather. At the head is a metal bar to which is attached the thoracic portion of the fixing harness. At the foot is a movable bar with a hook to which is fixed a thick strap leading from the pelvic harness. A low-geared winding mechanism below the platform moves the lever, the distal travel of which exerts a pull on the pelvic harness. A spring balance can be incorporated in the harness to measure the pull exerted. A pull of 100 to 200 lb. (45.4 to 90.7 kg.) should be applied. The rule is to apply as much traction as the patient can comfortably tolerate. The pull should be increased after the first 5 minutes and is maintained for 20 to 30 minutes without much discomfort—in fact patients may even fall asleep during such traction. The author discusses the indications for traction treatment in protrusion of a lumbar nucleus pulposus, for spondylolisthesis, and for protrusion of a thoracic disk. With regard to contraindications, he says that traction is ineffective in patients with disk protrusion in which there is acute lumbago with twinges, displacement of an annular fragment, sciatica awaiting "spontaneous recovery," and pressure atrophy of a root. Three events indicate that traction should not be repeated. 1. The pain suddenly increases during the initial stage of traction. 2. Sudden pain comes on at the end of treatment, just as traction is being released. 3. Sudden pain shoots down the leg during traction. In the past year, the author has given more than 450 treatments of spinal traction, and the patients are enthusiastic about the rapidity of relief from pain, especially those who have been treated in bed for previous attacks.

Treatment of Trigeminal Neuralgia with Vitamin B_{12}. S. J. Surtees and R. R. Hughes. Lancet **1**:439-441 (Feb. 27) 1954.

Surtees and Hughes believe that the use of massive doses of vitamin B_{12} as described by Fields and Hoff in 1952 holds out new hope for patients with trigeminal neuralgia. They used this treatment in 19 patients; 18 with trigeminal neuralgia and one with glossopharyngeal neuralgia. In the earlier cases, 1,000 mcg. of vitamin B_{12} was given by intramuscular injection twice weekly for five doses; but, since no toxic effects occurred, the dose was gradually raised, and the later patients received an inital course of 1,000 mcg. daily for 10 days, followed by 1,000 mcg. twice weekly for five doses. Some patients received 1,000 mcg. twice each day for periods up to three weeks without any apparent harm. Considerable improvement or great relief was obtained in 15 cases, moderate improvement in one case, and little or no immediate improvement in 3 cases. Though in some cases the neuralgia subsided only slowly during treatment, in most of those in which improvement took place it was noted after the second or third injection. There was considerable variation in the total amount of vitamin B_{12} necessary to give relief, but the minimum appears to be about 5,000 mcg. In one case, 43,000 mcg. were given before there was adequate improvement. The patient with glossopharyngeal neuralgia responded well to treatment. The authors conclude that vitamin B_{12} in large doses can produce a remission that may be continued for a long time; but there is no evidence that this treatment will permanently cure trigeminal neuralgia.

Pancreatic Extract in Treatment of Multiple Sclerosis. M. L. Lowry. Am. J. M. Sc. **227**:259-267 (March) 1954.

Depropanex (an insulin-free and protein-free pancreatic extract) was given a therapeutic trial in five men and six women between the ages of 23 and 57 years with multiple sclerosis and in a 51-year-old woman with amyotrophic lateral sclerosis. At first, patients were given 2 cc. of Depropanex intragluteally three times a week. Later, the dosage was increased to 3 cc., three times weekly. This schedule was continuous for from 4 to 18 months. In a few patients, occasional intervals without medication were advised. In only one patient had the disease been present less than 5 years, and its longest duration was 20 years. All patients had severe, demonstrable neuromuscular disabilities. Some were psychotic, hospitalized persons. Locomotion was benefited in four patients, bladder control in five, eye symptoms in six. Improvement of spasticity and coordination was noted in eight. Endurance was markedly improved in 10. Mental improvement occurred in 10 patients, including the psychotic patients. In some patients, even though there was no improvement, it was evident that the progress of the disease was halted. There were no local or systemic untoward reactions to the injections of 3 cc. of Depropanex three times weekly. Where improvement occurred, it was not apparent until after two months of treatment. Maximum benefit may be obtained after one year's therapy. The concept of multiple sclerosis as a probable disorder in carbohydrate metabolism is reemphasized. A possible connection between pancreatic biochemical activity, localized vasospasm, anoxemia, and neuromuscular function is discussed. There are indications that a metabolic derangement in the biochemical oxidation of carbohydrate, usually referred to as the Krebs cycle, perhaps at the pyruvic-lactic acid level, might also be involved in the neuromuscular pathology of multiple sclerosis. Depropanex deserves an adequate trial in patients with multiple sclerosis.

GYNECOLOGY & OBSTETRICS

Cortisone and ACTH in Pregnancy. L. Katzenstein and A. J. Morris. New England J. Med. **250**:366-367 (March 4) 1954.

A 36-year-old woman was in her third month of pregnancy when she asked medical aid because of an itching eruption of the arms and legs of one week's duration. A diagnosis of dermatitis herpetiformis of pregnancy was made. Therapy with 4 gm. of sulfapyridine per day was started. Despite this treatment, bullae appeared and the pruritus became so intense that the patient was admitted to the hospital on March 10, 1952, and large doses of sedatives were needed. The patient's condition deteriorated so that interruption of the pregnancy was considered. A trial of steroid therapy was indicated, even though there were misgivings about its effect on the fetus. Treatment was started on March 15 with intravenous injections of corticotropin, 20 mg. in 1 liter of 5% glucose in water, given daily over a period of eight hours. After the first day there was much less itching, and after three days no new bullae appeared. On the fifth day therapy with corticotropin was sttopped, and 175 mg. of cortisone was given by mouth. The cortisone dosage was gradually reduced until discharge on March 26 when the woman was receiving a dose of 62.5 mg. daily. At this time there were no itching and no new bullae, and the eruption was regressing. About six weeks after discharge, 100 mg. of cortisone daily was necessary to prevent the development of new bullae. From the 4th to the 9th month of pregnancy, the patient received approximately 3 gm. of cortisone and 1.3 gm. of corticotropin. On Sept. 4 a normal baby boy, weighing 5 lb. 2 oz. (2,325 gm.) was delivered. Physical examination revealed no abnormalities, and, since then, the child has had a normal growth and development. Seven other normal births after therapy with steroid hormones during pregnancy are cited. In the light of the experimental evidence that the exhibition of steroids during pregnancy is not without grave danger to the fetus, the authors feel that many more cases will have to be accumulated before the clinician can feel entirely safe in using these drugs.

The Role of Tracheotomy in Treatment of Eclampsia. J. E. Safley. Mississippi Doctor **31**:344-347 (March) 1954.

Of 1,634 obstetric patients delivered with Safley's supervision in the course of one year, 6 had convulsive toxemia. He usually controlled the convulsions with deep sedation by using amobarbital (Amytal) sodium, morphine, phenobarbital, and meperidine (Demerol) hydrochloride alone or in combination. Fluids consisting of 10% glucose in distilled water were administered intravenously to replace the urine output plus the insensible loss that was usually estimated at 1,000 to 1,500 cc. daily. After the convulsions were controlled, the fluid balance maintained, and the blood pressure lowered, there was almost inevitably marked respiratory distress as evidenced by a depression of respiratory rate, depth of inspiration, pulmonary edema, and retained secretions in the tracheobronchial tree. Occasionally the patient had laryngospasm. These factors usually led to hypoxia. Tracheotomy was performed in five of the six patients with convulsive toxemia and in one patient with non-

convulsive toxemia. The author feels that in this last case tracheotomy was a lifesaving procedure. One of the patients with convulsive toxemia was delivered shortly after admission and did not have severe respiratory difficulty; she did not require tracheotomy. The author feels that tracheotomy may mean the difference between life and death in those patients with eclampsia in whom hypoxia, cyanosis, and laryngospasm develop. Every modern delivery unit should be equipped with tracheotomy sets.

Effects of Ganglioplegics on Eclamptic Toxemia. G. B. Candiani. Riv. ostet. e ginec. **8**:853-866 (Dec.) 1953. (In Italian.)

The use of methonium salts, especially hexamethonium, proved useful in patients in labor, particularly when eclampsia was present or likely to occur. The general condition of the mother and the fetus was improved quickly, and measures could be taken to improve the local condition and facilitate the delivery. The renal function was improved with an increase in the diuresis; the increased glomerular output was not, however, ascribed to the induced hypotension per se but to the paralysis of the sympathetic ganglions that was followed by arteriolar vasodilatation. Candiani does not believe that the ganglioplegics are the definitive remedy for eclampsia, but they are useful in that parenchymal impairment caused by a severe and prolonged angiospasm and the effects that a permanent state of hypertension may have on the fetus are prevented. Failure of these drugs to bring relief to patients with eclamptic toxemia should be ascribed to the presence of an irreversible anatomic impairment rather than to a spastic functional factor. The author gave hexamethonium to nine women of whom five were at term of pregnancy and in labor when admitted, one in the ninth and two in the eighth month of pregnancy, and one in puerperium (after delivery of twins). Three had had convulsive attacks before admission, and a preeclamptic state was believed to be present in the other six in whom there was hypertension, albumin in the urine, headache, and vision disturbances. The patients' pressure ranged from 210/130 mm. Hg to 170/105. From 317 to 405 mg. of hexamethonium was given intravenously in divided doses. Two 50 mg. doses of the drug given 45 minutes apart failed to prevent four eclamptic attacks in one patient in whom eclampsia was present at admission. Hypotension was obtained rapidly in two and made successful forceps delivery possible. Eclampsia was prevented in the six patients who were believed to be in a preeclamptic state. Damage was not done to the mother or the fetus, and there was no nausea, vomiting, or paralysis of the ileum.

PEDIATRICS

Complications of Chickenpox. J. M. Humphries. J. M. A. Alabama **23**:198-201 (Feb.) 1954.

The occurrence of various complications of chickenpox is reported in eight children between the ages of 1 and 5 years. In three patients, neurological complications included absence of corneal and abdominal reflexes, loss of sphincter control, pain in the knees, generalized weakness of both lower extremities, and convulsions followed by periods of respiratory difficulty. Neurological complications can occur at any time during the course of chickenpox, varying from within a few hours after the onset to several days afterward. The cerebrospinal fluid may be normal or may show nonspecific changes, such as increased cells and protein as observed in a patient who had convulsions. The patient with generalized weakness of the lower extremities demonstrated that ascending or transverse myelitis can be caused by the virus of chickenpox without producing severe systemic reactions. The patient who had convulsions died; this is an example of the fatal encephalitic type. One patient had severe bilateral otitis media. One with severe glossitis emphasized the tendency of chickenpox to involve epithelial structures throughout the body. Dematological complications, such as severe perianal herpetic dermatitis and erysipelas, occurred in two patients. Chickenpox is capable of involving any epithelial surface and of causing systemic involvement. There is a possibility that the natural course of chickenpox in the past two years has been severer than that observed in previous years. Whether this is due to the indiscriminate use of antibiotics or whether the pathogenicity of the chickenpox virus has increased in recent epidemics cannot be stated.

Immunization of Young Babies Against Diphtheria. N. R. Butler, M. Barr and A. T. Glenny. Brit. M. J. **1**:476-481 (Feb. 27) 1954.

A preparation of Bousfield's diphtheria toxoid (F. P. T.), that is, purified diphtheria toxoid precipitated by aluminum phosphate (P. T. A. P.) to which additional unprecipitated purified toxoid had been added, was used in an investigation of the methods of immunizing babies against diphtheria. The dose injected on each occasion was 0.5 cc. (72.5 Lf.). Active production of diphtheria antitoxin in babies is greatest in those with little or no antitoxin in their cord blood. The interference with active production caused by higher passive titers did not appear to be reduced by the use of the F. P. T. preparation. Babies whose cord blood titers were below 1 unit per cubic centimeter and who were immunized with two doses of F. P. T. gave better antitoxic responses if treated at the ages of about 8 days and 14 weeks than if treated at the ages of about 8 days and 6 weeks. When the cord blood titer was 1 unit or more, responses were poorer in the group receiving injections at the longer interval. In the group treated at the short interval, comparison of the antitoxin levels of babies at the ages of 3 and 6 months suggested that many with cord blood titers above 0.004 unit per cubic centimeter had given an intermediate, not a secondary response to the second injection of the toxoid preparation. This was shown as a delayed production of antitoxin, caused by reduction in the effective first dose of F. P. T. because of neutralization by passively conferred antitoxin. A few babies with low cord blood titers gave better responses to two doses, each of about 25 Lf. of P. T. A. P., given at the ages of 8 days and 6 weeks, than similar babies receiving two doses of F. P. T. at the same ages. The general reaction rate was negligible after injections of F. P. T.; local reactions were also very slight and were less after deep subcutaneous than after subcuticular injection.

Therapy of Nephrotic Syndrome in Childhood. E. Lorenz. Wien. klin. Wchnschr. **66**:62-66 (Jan. 29) 1954. (In German.)

Lorenz gave amithiozone (Conteben) to nine children with the nephrotic syndrome. Beside being a tuberculostatic, amithiozone reduces the erythrocyte sedimentation rate, exerts an effect on the serum proteins, and favors excretion of fluids. Of the nine children treated, four had primary nephrosis, three secondary nephrosis, one amyloid nephrosis, and one a mixed, glomerulotubular form of disease with a predominantly nephrotic component. Amithiozone was given orally in doses of 1 to 3 mg. per kilogram of body weight per day. Treatment was started with small amounts of the drug, and the full dose was given only after three to five days of treatment when immediate tolerance had been established. The duration of the treatment varied from 10 days to several weeks, but a treatment period of 10 to 14 days seemed to be more effective than longer ones. In most patients diuresis, disappearance of edema, and reduced body weight occurred between the third and sixth day of treatment, i. e., close to the time when the full dose of amithiozone had been reached. Diuresis continued until an edema-free state was obtained (corticotropin type). In one patient, increased diuresis occurred within only one week after the administration of amithiozone was discontinued (cortisone type). All nine patients responded satisfactorily to the treatment. The specific weight of the urine decreased with the onset of the diuresis, and that suggests a genuine water diuresis. Spontaneous diuresis was improved and even restored to normal after one or several 10 to 14 day courses of amithiozone. Two patients made a clinical and biological recovery (complete return to normal of the protein spectrum), four remained in an edema-free state, and two were no longer brought to the clinic for examination and very likely had become free of complaints. One child with primary nephrosis died later, despite the treatment with amithiozone.

Control of Enuresis by Parasympathetic Blocking Agents. L. W. Keizur and C. V. Hodges. Northwest Med. **53**:27-29 (Jan.) 1954.

Administration of methantheline (Banthine) bromide to patients with normal bladders as well as to those with neurogenic bladders resulted in varying degrees of detrusor inhibition. Belladonna is known to exert a similar inhibitory influence on the bladder musculature and since the early 19th century has been the most efficacious drug available for treatment of enuresis. The 13 patients included in this report comprise a group with varied home environments. Five are welfare cases coming from broken homes, and seven patients came from families with intelligent parents. Ages ranged from 5 to 23 years, the latter patient being a soldier recently discharged from the Army because of enuresis. In each patient the history was taken, urine cultures were obtained, and, in most instances, cystoscopy and retrograde pyelography were done. A single 25 mg. dose of methantheline bromide was given at bedtime. Later, if necessary, the dose was increased to 50 or 75 mg. in order to secure the desired degree of bladder inhibition. Additional aids, such as fluid restriction after the evening meal, waking the patient at 1 a. m. for voiding, and a second dose of methantheline also were utilized. In several patients a six hour schedule of methantheline therapy was utilized; 25 mg. was administered orally every six hours along with a 50 mg. dose at 10 or 11 o'clock to inhibit bladder emptying through the remainder of the night. In 12 of the 13 patients, frequency of bedwetting was markedly diminished. Three patients became symptom-free, except for occasional accidents following excessive fluid intake after the evening meal or during periods of illness. Judicious selection of cases for drug therapy is of prime importance. Failure to recognize the presence of residual urine, atonic bladder states, urinary sepsis, or localized obstructive lesions can only lead to increased urinary difficulty. The use of long-acting parasympathetic blocking agents combined with evaluation and control of psychogenic factors appears to offer a new approach to the problem of enuresis.

OPHTHALMOLOGY

Adult Ocular Toxoplasmosis: Preliminary Report of Parasitologically Proved Case. L. Jacobs, J. R. Fair and J. H. Bickerton. A. M. A. Arch. Ophth. **51**:287 (March) 1954.

Jacobs and co-workers say that after Wilder in 1952 had found organisms resembling Toxoplasma by microscopic examination of chorioretinal lesions in over 50 cases of inflammatory eye disease, studies were begun to identify this organism by other means and to ascertain its importance as a causative agent in uveitis. The authors present the history of a 30-year-old man who had had recurrent chorioretinitis over a period of eight and a half years and in whom a blind and painful eye was removed. One-half of the removed eye was used for isolation studies and the other half for pathological examination. A severe inflammatory reaction was found in the retina and the uveal tract. Pseudocysts containing spherical forms of Toxoplasma were found in necrotic portions of the retina and in the adjacent choroid. All of six mice, two chick embryos, and eight tissue cultures of mouse and chick embryo tissues inoculated with the macerated inner layers of the globe were found one week later to be infected with a parasite that morphologically and serologically proved to be Toxoplasma gondii. Serologic data indicated that viable Toxoplasma may persist in the eye without stimulating production of high levels of antibody. The high dye-test titer one week after operation may be explained on the basis of a release of antigen from the globe during the operative manipulations.

Preservation of Corneal Grafts by Freezing. H. H. G. Eastcott, A. G. Cross, A. G. Leigh and D. P. North. Lancet **1**:237-239 (Jan. 30) 1954.

Eastcott and associates considered the possibility of storing corneal grafts by freezing and by using the glycerol in Ringer's solution technique that Polge and others described in 1949 and that was shown in other tissues to be compatible with a high percentage of surviving cells. They describe a method that gave satisfactory results in the preservation of human corneal tissue for grafting. Partial thickness corneal grafts stored at –79 C (–142.5 F) after immersion in 15% glycerol in Ringer's solution gave results that equaled those obtainable with fresh material. Both lamellar and full thickness grafts appeared normal in every way after thawing, except that loosening of the epithelium was noticed in two cases. Of the five lamellar grafts used, all have remained clear up to 10 months after operation. Effective union was obtained also in the seven full thickness grafts, but two of these became completely opaque and had to be replaced with fresh material. The authors feel that further study is needed to determine and eliminate the causes of failure in full thickness grafts. It seems that lamellar grafts can be stored indefinitely with this method.

Bilateral Exophthalmos as Indication of Rare Systemic Diseases. A. Nover and A. Goebel. Klin. Monatsbl. Augenh. **124**:29-38 (No. 1) 1954. (In German.)

Nover and Goebel report three patients with bilateral exophthalmos in whom clinical examination suggested the existence of a disorder belonging to the same group as Mikulicz's disease (chronic enlargement of lacrimal and salivary glands due to replacement of glandular tissue by lymph cells). The histological examination revealed in two cases the presence of proliferation of the lymphadenoid tissue in the orbit. The presence of large reaction centers in these follicles was especially noteworthy, and there was a tendency to the formation of giant follicles with proliferation of the reticuloendothelial elements. In case 3, studies of sections corroborated the presence of a lipogranulomatosis (Hand-Schüller-Christian's disease). In this case, the exophthalmos was the only manifestation of the disease, since diabetes insipidus and roentgenologic changes in the cranium were absent. The authors call attention to a possible connection of the first two cases with the reticuloses and the giant follicular lymphadenopathy also known as Brill-Symmers disease.

Symmetrical Inflammatory Pseudotumors of the Orbit in Myeloid Leukemia. K. Hartmann. Klin. Monatsbl. Augenh. **124**:38-45 (No. 1) 1954. (In German.)

There are three groups of pseudotumors of the orbit—(1) those that result from a systemic disease such as syphilis, tuberculosis, leukemia, pseudoleukemia, Hodgkin's disease, reticulosis, and generalized tuberculosis of the lymph nodes; (2) chronic inflammations of the orbit of unknown cause; and (3) orbital lymphomatosis (follicle formation and infiltration of the orbit with lymphocytes and plasma cells). In connection with symmetrical inflammatory pseudotumors of the orbit in a child with myeloid leukemia, Hartmann comments on the embryonal development of the hematopoietic system and on the clinical aspects and blood picture of myeloid leukemia, which must be differentiated from lymphatic leukemia. He emphasizes that myeloid leukemia represents an atypical hyperplasia of the myeloid tissue of the bone marrow with emergence into the blood of immature cells, particularly myelocytes, as well as their deposition and local increase in the various lymphatic organs. There is a preference for organs that, during the fetal period, participated in hematopoiesis (spleen and liver). Extensive involvement of the lymph nodes indicates an unfavorable prognosis. Occasionally skin (eyelids), nervous system and orbit became involved by the formation of peculiar proliferations and swellings that, on histological examination, proved to be myeloid in character. This suggests that in patients with myeloid leukemia there occurs a retrogression to the embryonal type of blood formation, that is, an activation of myeloid foci of blood formation outside of the bone marrow. The case reported concerns a 6-year-old girl in whom symmetrical inflammatory pseudotumors of the orbits was the first symptom. There was a considerable exophthalmos with protrusion of the bulbi, and the eye movements were restricted in all directions. The eye symptoms became increasingly severer, and roentgen treatment was resorted to. After four irradiations (of 80 r each) the pseudotumors decreased considerably so that blindness was prevented, and mobility of the eyes was restored two months before death. This case corroborates the favorable effects of irradiation in circumscribed myeloid cell proliferations. Despite the improvement in the orbital pseudotumors, the acute myeloid leukemia

progressed and within about four months led to death from cachexia and circulatory disturbances. In reviewing the literature, the author found that only a relatively small number of cases in which symmetrical inflammatory pseudotumors of the orbit were associated with myeloid leukemia have been reported.

Simple Procedure for Alkali Burns of the Eye. R. H. Dennis. J. Maine M. A. **45:**32-34 (Feb.) 1954.

According to Dennis, alkali burns of the cornea and conjunctiva can cause disastrous permanent disability much greater than burns caused by most other chemicals. There is immediate pain, orbicularis spasm, and decrease of visual acuity. The conjunctiva becomes injected and chemotic. The cornea becomes edematous and greyish, and there is usually loss of epithelium. The alkaline agent, softening and denuding the cornea, quickly penetrates to the aqueous and is carried to the anterior portions of the eye. This results in irritative or toxic iritis. Protein molecules quickly appear in the aqueous, and adhesions form between the lens and the pupillary edge of the iris. Peripheral adhesions between the iris and the corneoscleral angle can block the angle and ultimately cause glaucoma. The combination of the chemical with the tissue mucoproteins prolongs the burning action. Sulfhydryl (Hydrosulphosol) is the drug usually suggested for treatment, but suitable drugs are frequently not available when an alkali burn has to be treated. Copious irrigation should be instituted at once with any bland agent at hand, usually water. Pontocaine is instilled, and all particles of the chemical and devitalized tissue are removed. Irrigation is then continued every 15 or 30 minutes the first day, every hour the second day, and less frequently thereafter as indicated. Neutralization with weak acetic acid from household vinegar can be carried out at once and continued as part of the irrigation the first day. Secondary infection is prevented by using a sulfonamide such as 2% sulfadiazine dropped in after each irrigation. The use of egg membrane—an easily obtainable substance—has been suggested in very severe cases to prevent adhesions. The egg membrane is laid in the conjunctival fornices and lightly sutured over the cornea, thus separating the raw opposing surfaces.

THERAPEUTICS

Clinical Evaluation of Erythromycin. E. H. Shoemaker and E. M. Yow, A. M. A. Arch. Int. Med. **93:**397-406 (March) 1954.

After briefly describing the physical properties of erythromycin, Shoemaker and Yow say that clinical reports to date indicate that erythromycin is effective in many bacterial infections. The clinical studies presented here were begun at Jefferson Davis Hospital in July, 1952. Patients were selected on the basis of a known or suspected bacteriological diagnosis. Many were treated only after in vitro sensitivity studies demonstrated that the causative organism was sensitive to erythromycin or that it was resistant to other antibiotics. Many of the patients were severely ill with overwhelming infection, and all except two were adults. The diseases treated included pneumococcic pneumonia, streptococcic pharyngitis, streptococcic and staphylococcic septicemia, subacute and acute bacterial endocarditis, acute gonorrheal urethritis and cervicitis, wound infections, lung abscesses, and empyema. Two patients with bacterioid infections were also treated. The dose of erythromycin used was 25 mg. per kilogram of body weight per 24 hours. In the beginning of the study, erythromycin was given in capsule form with meals or with milk. Later, coated tablets were given before meals. Two patients received erythromycin intravenously. The duration of treatment ranged from 3 to 100 days. Routinely, erythromycin was administered for 72 hours after the patient was afebrile and clinically well. In every instance, a specific diagnosis of the causative agent was made. In vitro sensitivity tests were performed by the disk method. In patients with blood stream infections, the tube dilution technique was also used, and it was further determined whether erythromycin was bacteriostatic or bactericidal. Thirty-three patients with infection due to gram-positive and gram-negative cocci were treated with erythromycin. There was a prompt clinical and bacteriological response in all but three patients with endocarditis and two with staphylococcic empyema. There was clinical evidence that the absorption and antibacterial effect of the coated tablets was more consistent than that of the capsule. No serious side-reactions were observed, but an occasional patient complained of nausea, cramping abdominal pain, and diarrhea. The effect of erythromycin was most striking in the management of penicillin-resistant staphylococcic sepsis.

Observations on a Selected Antibiotic Combination. H. F. Flippin and G. M. Eisenberg. Am. J. M. Sc. **227:**117-127 (Feb.) 1954.

Extensive in vitro studies were made by the authors on the inhibition of various bacteria by single antibiotics or by a combination. Results indicated that a combination of chlortetracycline (Aureomycin), oxytetracycline (Terramycin), and chloramphenicol (Chloromycetin) possesses antibacterial properties that are not evident when these antibiotics are tested singly in equal concentration against the same organisms. During the winter of 1952 to 1953, a program was developed at the Philadelphia General Hospital to test the efficacy of several antibiotic regimens in the treatment of bacterial pneumonia. Of 62 patients with pneumococcic pneumonia, 38 received procaine penicillin in doses of 300,000 units intramuscularly every 12 hours and 24 were treated with 0.5 gm. of the combination of chlortetracycline, oxytetracycline, and chloramphenicol given every six hours by mouth. The length of treatment varied from 4 to 27 days (10.4 days average) in the group treated with penicillin and 4 to 26 days (10 days average) in the group that received the combination of drugs. The results in the two groups were equivalent and satisfactory. One of the patients given penicillin failed to respond satisfactorily, but the administration of the combination was followed by prompt improvement. No severe toxic reactions were noted in either group, but in one patient treated with the three drugs a stomatitis developed and was attributed to the drug therapy. Three of 24 patients with Klebsiella pneumonia who received penicillin for periods of 5, 7, and 15 days respectively, without clinical response, exhibited a fall in temperature within 72 hours after the institution of combination therapy. These preliminary clinical studies indicate that a combination of chlortetracycline, oxytetracycline, and chloramphenicol is just as effective therapeutically as penicillin in the treatment of pneumococcic pneumonia and may be superior to its use in Klebsiella pneumonia. Fourteen selected patients with refractory urinary tract infections were treated with 2 to 3 gm. of chlortetracycline, oxytetracycline, and chloramphenicol combined daily in divided doses for 5 to 10 days. Results showed that the combination has merit and is worthy of additional study in the treatment of refractory urinary tract infections. In addition, single cases of typhoid and bacteroid empyema were likewise successfully treated with the combination of chlortetracycline, oxytetracycline, and chloramphenicol. The authors feel justified in employing antibiotic combinations clinically in cases in which appropriate laboratory tests fail to demonstrate definite antagonism.

Growth of Candida Albicans During Antibiotic Therapy. J. L. Sharp. Lancet **1:**390-392 (Feb. 20) 1954.

Sharp investigated the frequency of Candida albicans in throat swabs, sputum, and rectal swabs of 174 patients with pneumonia before, during, and after treatment with either oxytetracycline (Terramycin) or sulfadiazine. Candida was isolated from 26% of throat swabs, 48% of sputums, and 3% of rectal swabs from patients on admission to the hospital. In the group that received oxytetracycline, after a five day course of an average dose of 14.2 gm., the proportion of specimens with Candida rose from 16 to 42% in the throat swabs, from 32 to 61% in the sputum, and from nil to 59% in the rectal swabs. In the group that received sulfadiazine, there was no increase of Candida during treatment, but two to four days later the proportion of positive specimens rose from 30 to 49% in the sputums and from 5 to 20% in the rectal swabs. The presence of Candida was not associated with clinical symptoms of moniliasis. In commenting on these observations, the author points out that the increase of Candida in the sputum and rectal swabs after cessation of sulfadiazine therapy is surprising and suggests the possibility of cross infection from patients who received

oxytetracycline and who were excreting large numbers of Candida. The dismissal of many patients from the hospital when they were still heavily infected with Candida raises the possibility of infection of home contacts. The exposure of young children to moniliasis is as potentially dangerous.

How Do Salicylates Act? How Should They Be Prescribed? J. Roskam and Van Cauwenberge. Presse méd. **62:**165-167 (Feb. 3) 1954. (In French.)

Attempts to invalidate the theory that the salicylates stimulate the production of hormones have been unsuccessful. Experimental data show that the administration of salicylates to rats stimulates the secretion of the 17-hydroxycorticosteroids indirectly by way of the hypothalamus and the hypophysis. Ingestion of sufficiently large doses of sodium salicylate by patients with acute illness is followed, after an adequate lapse of time (6 to 8 hours), by a decline in the number of circulating eosinophils clearly indicative of 17-hydroxycorticosteroid hypersecretion. Prolonged administration of large doses of salicylates leads to increased urinary excretion of both the 17-hydroxycorticosteroids and the reducing corticoids, presumably as a result of their increased secretion. The strictly pharmacological properties possessed by the salicylates apart from their hormonopoietic action do not seem to be in any way responsible for their effect in inflammatory rheumatic conditions. Further experimentation and study are needed to establish the manner in which these drugs act, but the practical problems connected with salicylate therapy in inflammatory rheumatism and similar conditions seem to be dominated by the existence of a close relationship between the regression of symptoms and the blood level of salicylate in each patient. The degree of salicylemia found most stimulating to the secretion of corticotropin (ACTH) in rats is precisely that which has proved most beneficial to patients with subacute bacterial endocarditis. Constant maintenance of this level (35 to 40 mg. per milliliter) can be secured only by the daily ingestion of from 6 to 8 or even 10 gm. of sodium salicylate or acetylsalicylic acid in divided doses at equal intervals throughout the 24 hours. Hormone therapy may be combined with the use of salicylates in cases in which salicylates alone prove ineffective, because either the patient's response is inadequate or his condition is particularly grave.

RADIOLOGY

Radioactive Gold in Palliative Treatment of Malignant Effusions. O. A. Couch Jr. J. Tennessee M. A. **47:**49-53 (Feb.) 1954.

As a complication of widespread metastatic tumors, effusions into the serous cavities may be distressing, as they may mechanically interfere with the function of the lungs, heart, and gastrointestinal tract. The loss of protein into the effusion may be considerable. Radioactive gold has been used in the management of these effusions. Couch presents here the results of the use of radioactive colloidal gold (Au^{198}) in the palliative treatment of pleural and peritoneal effusions in seven patients. The results were rated as excellent in four patients. In these four, the survival time was of such length that the effectiveness of the treatment could be definitely established. Two survived 5 months and two survived 14 to 15 months with satisfactory control of fluid. Two were estimated as having good results. In one the survival time was so short that no estimate of effectiveness could be given. These results seem to confirm the opinion of others that the intracavitary injection of radioactive gold is of value in controlling malignant effusions.

Short Esophagus with Esophagogastric or Marginal Ulceration. B. S. Wolf, M. Som and R. H. Marshak. Radiology **61:**473-495 (Oct.) 1954.

Wolf and associates describe roentgenologic and esophagoscopic observation in 29 cases of short esophagus with peptic ulceration at the esophagogastric junction. Three features were constant in the cases studied: 1. The esophagus was short, i. e., the junction of the esophagus and the stomach, as determined by the nature of the lining epithelium, was above the esophageal hiatus of the diaphragm. 2. There was free reflux or regurgitation of gastric contents into the gastric pouch above the diaphragm and from the pouch into the esophagus. 3. Ulceration was demonstrated at the esophagogastric junction. Although the roentgenographic criteria for the identification of the esophagogastric junction are frequently equivocal, in the cases of this series, because of the presence of inflammatory changes or stenosis, there was no difficulty in recognizing that this junction was above the diaphragmatic hiatus. Moreover, the gastric pouches in these cases were of sufficient size (3 cm. or more in diameter) that a typical configuration and a gastric mucosal pattern were usually demonstrable. Twenty-two of the 29 cases reviewed here were classified as stenotic and 8 as nonstenotic. The patients in both groups complained of heartburn, which in many cases occurred at night or on bending over. At times, the pain was agonizing, and occasionally it radiated to the neck, between the shoulder blades, or to the jaws and ears. Relief was frequently obtained by assuming an erect position. Dysphagia occurred in 24 and bleeding in 8 patients. That marginal ulceration may be confused clinically with arteriosclerotic heart disease was evident in eight cases in which the diagnosis had been coronary occlusion or insufficiency. The cause of marginal ulceration is prolonged contact of acid gastric juice with the esophageal mucosa. Differentiation of marginal ulceration from carcinoma of the cardia requires esophagoscopy and biopsy. Medical treatment consisted in an ulcer regimen with antacids and methantheline (Banthine) bromide. Methantheline may relieve heartburn, but dysphagia may be increased. The patient is advised to avoid postures that cause regurgitation and to sleep with his head elevated. Medical treatment is rarely satisfactory for any great length of time. With the onset of dysphagia, instrumental dilatation is required. Esophagoscopy with bouginage and the use of a Hurst mercury-weighted tube were recommended in both stenotic and nonstenotic cases when dysphagia was a prominent symptom. In stenosis, progressive dilatation with Jackson bougies is required. Recurrence of symptoms is frequent, and repeated courses of instrumental dilatation may be required. In patients with severe malnutrition, a Levin tube may have to be used for alimentation. The authors had no significant experience with surgical therapy, but feel that a simple esophagogastrectomy is often followed by regurgitation, and recurrent esophageal ulceration may be anticipated. A simultaneous vagotomy and resection of the acid-producing portion of the stomach have been recommended in order to produce an achlorhydria.

PHYSIOLOGY

Diastolic Passivity or Activity? L. Villa. Semaine hôp. Paris **30:**617-622 (Feb. 10) 1954. (In French.)

The question is reviewed of whether the dilatation of the ventricles of the heart during diastole is caused simply by the mechanical force exerted by the auricles as they push blood into the ventricles or whether there is actually a decontracting action on the part of the ventricular myocardium. Many physiologists, Harvey among them, have accepted this notion of passivity as a simplistic concept; Villa, however, makes a case for activity. He points out that Luciani, in 1871, noted the existence of a strong force of aspiration and the diastolic filling of the right ventricle of a dog after having suppressed the mechanical activity of the right auricle. Luciani also observed that stimulation of the vagus nerve increased this aspirative force. The concept of diastolic passivity does not account for the filling of the ventricles that takes place during auricular fibrillation. Furthermore, in cases of mitral stenosis with extreme dilatation of the left auricle, the altered auricular myocardium would be incapable of exerting the force required to fill the ventricle, and sometimes in mitral stenosis the force exerted by the right auricle is diverted into the pulmonary artery where it peters out to nothing. The most decisive arguments in favor of the modern concept of diastolic activity lie in the biochemistry of the myocardium. The mechanism of ventricular dilatation is conditioned by biochemical phenomena involved in the action of muscles in general, just as is the mechanism of ventricular contraction. The period of decontraction is essential to heart rhythm and to myocardial tone; it guarantees against hypertonus and systolic arrestation. The consequences for therapy of this knowledge are discussed, and it is pointed out that digitalis has its effect on the period of decontraction. That is why it ameliorates diastole.

BOOK REVIEWS

A Handbook of Operative Surgery: Surgery of the Biliary Tract, Pancreas & Spleen. By Charles B. Puestow, M.D., Ph.D., Clinical Professor of Surgery, College of Medicine and Graduate College, University of Illinois, Chicago. Cloth. $9. Pp. 370, with illustrations by Jessie W. Phillips. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1953.

This excellent monograph is presented in four sections, dealing with the liver, the extrahepatic biliary tract, the pancreas, and the spleen. It is truly amazing that the author was able to cover so much material in such a small volume and to do it so well. The section on the liver presents an adequate account of the anatomy and physiology of the liver, the various function tests, and the importance of liver biopsy. The common diseases and injuries of the liver are discussed, as well as the complications of liver disease. Portal hypertension and its therapy are discussed. The anatomy and physiology of the extrahepatic biliary tract and the pathogenesis of biliary dyspepsia are adequately and interestingly described. There is a very complete account of the diseases of the gallbladder and the complications of cholecystic disease. Preoperative and postoperative care and anesthesia for biliary tract surgery are discussed. The section dealing with the gallbladder and the extrahepatic biliary ducts has the completeness that one would expect in a much larger volume. The anatomy and physiology of the pancreas and its diseases are excellently reviewed. The same is true of the spleen. This volume for the surgeon can also be read with profit by medical and surgical house officers and internists. It is full of excellent illustrations. The volume falls short in only two particulars: it does not provide a bibliography, and the author has failed to give credit to many workers who have made significant contributions to the fields covered in this volume. Every surgeon will find material on which he might take issue with the author, but in so short a volume it is well that the material presented should represent chiefly the author's personal point of view.

Disorders of the Blood: Diagnosis, Pathology, Treatment, Technique. By Sir Lionel E. H. Whitby, C.V.O., M.C., M.D., Regius Professor of Physic in University of Cambridge, Cambridge, England, and C. J. C. Britton, M.D., D.P.H., Physician and Hæmatologist to Prince of Wales's Hospital, London. Seventh edition. Cloth. $9.50. Pp. 856, with 126 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; J. & A. Churchill, Ltd., 104 Gloucester Pl., Portman Sq., London, W.1, 1953.

Because of its popularity, new editions of this book have been published every few years since the first in 1935. The reader will find help and advice in this remarkable volume. Outstanding among the good qualities of the book is its up-to-dateness. To have achieved this in a field changing as rapidly as hematology is no minor accomplishment. The present edition contains almost everything worth knowing about hematology until and including a good part of 1953. Thorough revision has resulted in a number of added recent references and in the omission of some outdated ones. The chapters dealing with hemopoietic metabolism, therapy, coagulation, and hemorrhagic diseases have been thoroughly revised. A new chapter on biochemistry and cytochemistry of hemopoiesis was added. Recent advances in immunohematology have been given due consideration, but already the rapid growth of this branch of hematology has outdistanced the presentation in the book.

The judicious selection of material from the avalanche of publications in this field, the clarity of presentation, the absence of didactic dogmatism, the consideration given to both sides of unsettled problems, the recognition that there are more than two sides to most arguments, and the emphasis on pathological and other basic aspects are a few of the features that have made this textbook outstanding. New summaries in tabular form are a welcome recent addition in some chapters. By way of minor criticism, although most of the color plates are satisfactory or at least acceptable, nuclei in the peripheral blood in pernicious anemia do not look like those in the upper part of plate 11; neither do myeloma cells look like those in the section reproduced in the midportion of plate 18. Several new black and white plates have been introduced in this edition, possibly for reasons of economy. They will serve as excellent examples of the limitations of black and white as compared with color reproductions. Plates 7, 12, and 14 are good examples of what a black and white reproduction cannot offer. Even worse is figure 3 in plate 19, because it fails to convey convincing pictorial evidence of hematopoiesis. There is every reason to believe that this new edition will continue to serve as one of the best sources of information for students of hematology. To physicians in general practice, internists, clinical pathologists, and all interested in blood in one way or another, this book is recommended without reservation.

The Nurse in the Public Health Program. By Pearl Parvin Coulter, R.N., M.S., Director and Professor of Public Health Nursing, University of Colorado School of Nursing, Denver. Cloth. $4.75. Pp. 309, with 5 illustrations. G. P. Putnam's Sons, 210 Madison Ave., New York 16, 1954.

The author's purpose is to present material that will assist the orientation of the student nurse toward public health and to suggest some of the techniques that will help her to gain facility in the complicated area of interpersonal and intergroup relationships. This approach was prompted by the belief that achievement of skill in cooperative activities is indispensable to the effective practitioner of community nursing. Each of the book's 11 chapters concern the concept of teamwork as a basic approach to public health problems. The nurse's relationship with the family, the doctor, the hospital, the social worker, the citizen in the community, and the teacher are dealt with in detail. Broad techniques to achieve teamwork such as organization, professional competence, and professional status are discussed in separate chapters. Case studies are effectively used to illustrate important principles. This book presents a fresh point of view that deserves considerable attention as a technique in stimulating understanding of what constitutes total patient care. Its wide use of case studies should be helpful to beginning students. This book should serve as a valuable reference book.

The Psychosomatic Concept in Psychoanalysis. Edited by Felix Deutsch, M.D. Monograph series of Boston Psychoanalytic Society and Institute, no. 1. Cloth. $4. Pp. 182. International Universities Press, Inc., 227 W. 13th St., New York 11, 1953.

This small book is a collection of papers presented at a symposium on psychosomatic medicine held in early 1952 at the Boston Psychoanalytic Society and Institute. The five main contributions by well-known visiting psychoanalysts are "Genetic and Dynamic Psychophysiological Determinants of Pathophysiological Processes," "Some Current Trends and Hypotheses of Psychosomatic Research," "The Problem of Specificity in the Psychosomatic Process," "Genesis of Psychosomatic Symptoms in Infancy," and "Problems of Therapy." The discussants are from the Boston society. In the last 15 years much has been published on psychosomatic illnesses. Personality profiles with statements concerning nuclear conflicts such as repressed hostility in hypertension and dependency in gastric ulcer have left much to be desired, for the same conflicts are found in others in whom these reactions do not develop.

This book, which concerns itself more with general concepts than symptom patterns, reports on psychoanalytic research that has carried investigations to a deeper personality level. The authors believe that psychosomatic reactions, at least as seen in the general hospital, are more closely comparable to the psychoses than to the neuroses and that the somatic and psychological traumas occur in early infancy, probably in the preverbal period when the mother-child relationship is of singular import. In this early period of life the homeostatic boundaries are broad, and equilibrium is more easily maintained without the production of symptoms; but later in life the homeostatic boundaries

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

have narrowed markedly, and, when a trigger situation sets off "physiological regression," equilibrium is upset and symptoms are produced. Therapeutic suggestions on the basis of this and other hypotheses are offered. Those especially interested in psychosomatic reactions and familiar with psychoanalytic concepts should find this book informative in stating the facts, hypotheses, and unanswered questions of our present-day knowledge. Psychoanalysts should be interested in learning how psychosomatic research has been related to psychoanalytic theory. This is not a book for the general practitioner or medical student.

History of the Second World War: United Kingdom Medical Series. Sir Arthur S. MacNalty, K.C.B., M.D., F.R.C.P., editor-in-chief. Surgery. Edited by Sir Zachary Cope, B.A., M.D., M.S. Cloth. 80s. Pp. 772, with illustrations. Her Majesty's Stationery Office, P. O. Box 569, London, S.E.1, 1953.

This is another volume in the United Kingdom Series on the history of World War II, compiled under the direction of an editorial board. Numerous names of members of the board representing the governmental services, as well as those of the editorial committee, appear in the introductory pages. This is an outstanding presentation of the surgical procedures followed in the British Medical Service. The book has 25 chapters with illustrations—some in color—and bibliographies at the end of most of the chapters. An excellent introduction on surgery in wartime is provided by Sir W. H. Ogilvie. The chapter on shock and resuscitation was written by Sir Zachary Cope.

In the chapter on abdominal and thoracoabdominal injuries Sir Gordon Gordon-Taylor points out that the marked improvement in the results of abdominal surgery is related far less to any remarkable change in operative technique than to such surgical adjuvants as limitless blood and blood derivatives, chemotherapy, the proper evaluation of gastric suction and parenteral feeding, and a realization of the importance of retaining patients with abdominal wounds in an appropriate environment from 10 to 14 days after operation. The one important advance in surgical technique was the exteriorization of wounds of the colon, an operation that came into being in the East African campaign under Ogilvie's aegis. Another important factor was the great spirit in the hearts of the forward surgeons of the desert, the Burma jungle, the Italian glacis, the plains of northwest Europe, those who toiled in the islands and atolls of the East, and in ships. These surgeons "tackled" every man who was brought to the operating table alive, unless there was another man with a better chance in urgent need of surgery at the same time. In giving transfusions to patients with abdominal wounds, the amount of blood required was usually from 2 to 3 pints. The blood pressure would begin to rise as the first pint was given, and usually the patient was sufficiently recovered for the operation to be started in one to two hours. The rate of transfusion was determined by the needs of the patient, it being essential sometimes to give the first pint of blood in as short a time as five minutes. In some patients five or even more pints were given, although it was realized that there was some danger in over-transfusing a patient. General agreement did not exist on the use of "traveling transfusions" rigged up in ambulances on the front line and used on the way back to the operating center, but it was observed on numerous occasions that a "traveling transfusion" had kept a man alive when without it he would have died on the way. The wounded were sometimes in a state of complete physical exhaustion at the time of their wounding, and this factor seemed very important in the outcome of the operation on abdominal injuries. At one surgical center at the end of the second week of a campaign, two field surgical units performed abdominal operations on 12 patients in one night; all of them died. The only altered factor to which this could be ascribed was the exhausted condition of the men when they were wounded. Sir Gordon-Taylor mentions that prophylactic administration of anti-gas-gangrene serum was required in cases in which supervention of gas gangrene seemed possible. It is believed in the United States that this prophylactic measure is ineffective.

Concerning injuries of the colon it is said that one definite advance of surgery in World War II was the routine treatment of such injuries by exteriorization. This became uniformly accepted as a primary treatment on all fronts.

The chapter on orthopedic surgery was prepared by H. Osmond-Clarke. One of the most notable features of World War II from the orthopedic point of view was the great reduction in the number of amputations that were necessary. This was believed due to the narrowing of the indications for amputation and to improvements in surgical technique, in chemotherapy, and in the general management of wounds of all kinds.

In the chapter on plastic surgery, R. F. V. Battle, in discussing anesthesia, says that later every plastic surgery unit was supplied with a Heidbrink apparatus. Almost every patient operated on was first anesthetized with thiopental (Pentothal) sodium and then intubated. Thiopental sodium was avoided, however, in cases of burns. In the maxillofacial units there is no evidence, it is said, that inhalation anesthesia caused any mortality at all—"quite a remarkable record and probably unmatched by any army in the world."

In reviewing neurosurgery, Sir Zachary Cope says that blood transfusion was required preoperatively for patients who had lost blood, for those whose wounds were already infected, those with multiple wounds, and those who had been unduly exposed. At the battle of Cassino blood was given to 15% of all patients with head wounds, with an average of 2.5 pt. (1,182 ml.) per patient. The lengthy chapter on spinal cord injuries was prepared by Ludwig Guttmann. The facts given demonstrate the fundamental change in the whole conception of rehabilitation of paraplegic patients. The most gratifying result is the complete change in the mental attitude of most of these disabled persons toward work and their realization that regular work is an important factor in human happiness.

R. C. Brock, in the chapter on thoracic surgery, says that in the period between the two world wars a dramatic development in thoracic surgery came about, chiefly from the impetus received during World War I and the return to civil life of the young surgeons who had seen the possibilities in thoracic surgery. Epoch-making was the introduction about this time of the one-stage lobectomy by the tourniquet technique, which enabled surgeons to do lung resections. At the same time there was a remarkable development in the technique of anesthesia for intrathoracic operations. With these and some other factors, thoracic surgery developed into a robust specialty by the time of World War II. A great advance was the extended application of decortication in cases of chronic empyema and in cases of clotted hemothorax. It was soon learned that decortication in such cases was best performed early, as the longer the delay, the thicker the cortex became, often holding the lung in a trap in the most bizarre positions and conformations and preventing it from expanding. One of the most dramatic sights in surgery, he says, was the displaying after decortication of the compressed and distorted lung transformed into a freely aerating, normal-sized organ.

Other interesting and well-written chapters are included on radiology in the field, otorhinolaryngology, genitourinary work, the effects of blast, the crush syndrome, immersion foot, amputation and limb fitting, nonpulmonary tuberculosis in war, and physiotherapy and rehabilitation.

Into Manhood. By Roy E. Dickerson. Cloth. $2. Pp. 118, with 4 illustrations. Association Press, National Council of the Y. M. C. A., 291 Broadway, New York 7, 1954.

Instead of limiting himself to the anatomy and physiology of sex, the author goes into the whole picture of physical and emotional growth and development and approaches the specific development of the sexual organs and the secondary sex characteristics only after discussing the rest of the person and personality. A chapter on the problems of the older teen-ager goes into many of the social and emotional problems that increasing awareness of sex are likely to produce. This and the chapter on standards of behavior enter quite deeply into moral behavior and give the youngster reading this book the arguments that may be used against the temptations offered by his associates. The material in this book is as accurate as elementary material can be; it appears to be at about the level of understanding of the junior high school student, but it may be read with profit by boys of any age.

The Motion of the Heart: The Story of Cardiovascular Research. By Blake Cabot. Cloth. $2. Pp. 173: Harper & Brothers, 48 East 33rd St., New York 16, 1954.

This book was written under the auspices of the American Heart Association. Its author, who is not a doctor, visited many clinics and laboratories in search of material. The original manuscript was read by a number of cardiologists who acted as a "semi-official advisory committee to the author." The result is a story of one important field of medical research. This small volume tells in a simple, readily understood style the fascinating story of the growth of our knowledge regarding the functions of the heart, the circulation, and the various associated problems. The role of cholesterol in the causation of atherosclerosis, experimental production of hypertension in dogs, the story of coronary thrombosis, the action of digitalis, the origin of the heart beat, the causes of heart failure and their treatment, and the congenital and acquired anomalies and diseases of the heart and their surgical treatment all receive more or less complete discussion. Historical references to Harvey, Malpighi, Hale, Claude Bernard, and the modern researchers act as milestones in this fascinating journey and make the reading of the book even more exciting and interesting. The value of this small volume is not so much in furnishing the reader with information as in introducing him to the world of research and the research worker's problems and methods.

Peptic Ulcer. By C. F. W. Illingworth, C.B.E., M.D., Ch.M., Regius Professor of Surgery, University of Glasgow, Glasgow, Scotland. Cloth. $8.50. Pp. 287, with 89 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; E. & S. Livingstone, Ltd., 16 and 17 Teviot Pl., Edinburgh 1, 1953.

The author has carefully covered all of the important problems related to peptic ulcer. The normal physiology of gastric secretion and the fundamental experiments are well described. The pathology of ulcers, with all the experimental descriptions of production, is well covered. Chapters on etiology, psychosomatic approach, and incidence are of great interest. While there is nothing new in this book concerning medical or surgical treatment, the author's presentation and attitude are excellent. For a complete review of the subject of peptic ulcer, this book can be recommended. It fills a need for a clear, authoritative presentation of the etiology, clinical aspects, and complications of peptic ulcer. The bibliography is rather small, but the references are well chosen from a voluminous literature. The illustrations, diagrams, and charts are excellent. This volume is particularly recommended for students, but anyone needing to review this subject would be benefited by reading it.

The Allergic Child. By Harry Swartz, M.D. Cloth. $3.95. Pp. 297. Coward-McCann, Inc., 210 Madison Ave., New York 16, 1954.

This book has been written as a guide and help to the parents of allergic children. Its greatest shortcoming is in the organization of its material, which tends to be confusing. It contains some sound advice concerning the fallacy of outgrowing allergy and the importance of early treatment. It repeatedly stresses the importance of diet during pregnancy as a cause of allergy in infancy, although this opinion has by no means been accepted by most allergists, and may serve no purpose except to put unnecessary fears in the minds of prospective mothers. The psychogenic aspects of allergy are dealt with in great detail. Although no one can deny their importance, the author inclines to the belief that psychic factors alone can cause allergic symptoms—an opinion not generally shared by other allergists. The idea that sensitivity to horse serum arises from contact with horsehair mattresses will hardly bear inspection, as the horsehair used in mattresses is all thoroughly sterilized, contains no dander, and is not an allergen. Likewise, the designation of cornstarch as an important allergen is a point on which the author would find a great many allergists in disagreement. From the viewpoint of the layman it would have been far better had the section on vitamins and the lengthy list of rarer forms of allergy been relegated to an appendix. The impression undoubtedly will arise that the clinical therapy is so involved and difficult that little can be done, although this is the reverse of what the author intended.

Traité des cardiopathies congénitales. Sous la direction de E. Donzelot, professeur de clinique cardiologique à la Faculté de médecine de Paris, et F. d'Allaines, professeur de clinique chirurgicale à la Faculté de médecine de Paris. Par R. Heim de Balsac, et al. Cloth. 14650 francs. Pp. 1116, with 1155 illustrations. Masson & Cie, 120 boulevard Saint-Germain, Paris, 6e, 1954.

This is the most comprehensive textbook on congenital heart disease to appear since the subject became a matter of widespread interest. It is the second textbook on this subject from France in about six months. Its object is to present in perspective a five year experience with 1,100 patients, 600 of whom were operated on, of a clinic founded to evaluate patients with congenital heart disease for surgical treatment. The first section gives a background of embryology; pathophysiology; methods of diagnosis from the clinical, radiological, and physiological viewpoints; and principles of medical and surgical treatment. The body of the book presents an orderly, comprehensive account of all important lesions and almost all of the less well-known ones. Finally, there is a section tabulating all pertinent clinical and physiological data for each entity. The authors realize that no textbook in such a rapidly developing field can be complete, or completely up-to-date, and they have not attempted to compile a complete bibliography. There is room for difference of opinion on many minor points of emphasis and interpretation, and there are minor omissions; for example, the account of the electrocardiogram of left ventricular hypertrophy is not clear, and the interpretations of the electrocardiograms shown in figures 610 and 630 in terms of "barrage" and "adaptation" types of right heart strain seems loose. There is no reference to the pressure pulse forms seen in the right atrium in pure pulmonic stenosis or tetralogy of Fallot. No mention is made of premature closure of the patent foramen ovale as a cause of hypoplasia of the left side of the heart. Recent contributions of dye-dilution curve studies to the physiology of anomalous pulmonary venous drainage and interatrial septal defect could well be included in the next edition. However, the authors have written this book frankly in terms of their experience and judgment. The amount of material on any particular entity is determined by its incidence and the value of existing treatment; thus the book is not esoteric in its approach. The chapter on the tetralogy of Fallot is impressive in its thoroughness. The review of the literature, the large, well-chosen bibliography, and the index make this an excellent reference book. Many of the chapters are written with a personal touch and with imagination. The French is straightforward, and there is a unity of style despite multiple authorship. The book is copiously illustrated with roentgenograms, electrocardiograms, and autopsy material. Reproduction is usually good, although the paper does not seem to be of the best quality. On the whole, this book should be a definite asset to any cardiologist, and to the student of congenital heart disease in particular.

Politia Medici: An Essay on the Physiology of Society. By Jerome Head, M.D. Cloth. $3.50. Pp. 270, with illustrations. Published by the author, 55 E. Washington St., Chicago 2, 1953.

The title of this extremely urbane work is difficult to translate in a way that conveys all of its implications. It refers to a work of Plato's called "The State." The Latin *politia* (which, incidentally, is accented on the third syllable) means "the administration of the Commonwealth." The book thus is a physician's philosophy of human society, his thoughts about the forces that determine the rise and fall of individuals or governments, his feelings about truth and freedom, and his convictions about the means required for their preservation. Great knowledge of history and literature is implicit in its epigrammatic sentences, and its style might be described as surgical in its deliberate incisiveness. The richness of allusion and the crispness of manner are not without semantic drawbacks, for often the sentences imply "all" or "always" when they ought to read "most" or "usually," national groups are typed, and individual differences are slighted. The author entertainingly sets forth some fundamental laws of human group behavior, self-preservation, the exploitation of others, the balance of power, and the corrupting influence of power. Whether he has advanced philosophy is a question, but he has made a serious contribution to belles-lettres.

QUERIES AND MINOR NOTES

AIR CONDITIONER, REFRIGERATING UNITS

To the Editor:—*I am attempting to ventilate my office with window air conditioners and have heard numerous varied claims regarding the amount of air-circulating capacity of the many different units available to provide proper ventilation; also, at times patients with asthma and hay fever inquire regarding filtered air-circulating units (inexpensive) for use. What is the proper capacity of a unit for ventilating a room? What is the proper refrigerating capacity for cooling office space? Are there any inexpensive units available for patients with hay fever and asthma to furnish filtered air in adequate capacity and properly ventilate a room? Who manufactures this type of air-filtering unit? If it is not available commercially, can plans be obtained so that patient can make such a unit?* *W. Forrester Maley, M.D., Chicago.*

Answer.—The proper capacity of an air conditioner, refrigerating unit for room ventilation cannot be readily stated in general terms. To determine the proper size unit, one must consider such things as the number of cubic feet of space in the room, the number of doors and windows, the average number of persons who will occupy the room, and the anticipated outdoor temperature and relative humidity. The cooling capacity of air conditioners is rated by a unit known as the "ton of refrigeration." This unit originated in days when ice was the principal source of summer cooling. The refrigeration "ton" is defined as the cooling effect realized when a ton of ice at 32 F melted to water at 32 F. Since it takes 144 British thermal units (BTU) per pound to convert a pound of ice to water at the same temperature, the "ton" represents a unit cooling effect of 288,000 BTU. At the present time, the "ton" is usually considered as a rate rather than a quantity and is taken at 12,000 BTU per hour. It follows then that the decision as to what size unit to use depends on the amount the temperature of the room of air is to be cooled per hour. Reliable manufacturers of air conditioners should be able to provide recommendations as to the proper size and number of units which should be used in any given installation.

The simple window-unit air filters that do not include the refrigeration or humidity control features are available on the market. The classified section of the local telephone directory should be consulted. However, insofar as relief to patients suffering from allergies due to dust and pollen is concerned, it is impossible to state in an individual case how much relief will be obtained from the use of either the simpler fan driven air-filtering devices or the more complete air-conditioning units. The patient may obtain relief while in the room in which the pollen count is lowered, but, in the course of daily activities, he is usually compelled to leave such a room and again is exposed during the hay fever season to high pollen counts. Nevertheless, these devices may help lower the pollen content in the bedroom and may help provide the patient with a more restful night. Devices can only be considered as adjuncts to the total care of the allergic patient. In some instances, it is necessary to remove drapes and window curtains and rugs from the floor, to wipe walls, ceilings, and floors with a damp cloth, and to cover bedding with a hypoallergenic material in order to remove the allergens that collect on the surfaces of these items.

TEST FOR PREGNANCY

To the Editor:—*Could you please inform me of the present status of the frog test for pregnancy.* *M.D., Michigan.*

Answer.—The South African frog (Xenopus laevis) has been used in the diagnosis of pregnancy since 1942. The mature female extrudes eggs within a few hours after the injection of human pregnancy urine (chorionic gonadotrophin). The test is reported to have an accuracy of 98%. Its disadvantage, however, is the difficulty in maintaining the animals in a healthy condition.

More recently (1947-1948) male frogs of many species have been used for pregnancy tests. The positive reaction is exhibited by the release of spermatozoa within one-half hour and not later than two hours after the injection of pregnancy urine. Although this test is not so accurate as in the female frog, there are few false positives and no false negatives; however, the incidence of false positives may vary with the season. The rapidity of the test and the availability and inexpensiveness of the frogs have made this test popular.

PEPTIC ULCER IN CHILDREN

To the Editor:—*What is the prognosis of a 6-year-old child with duodenal ulcer? Are there any 25 year or more follow-up statistics? What are the surgical indications? What procedures are preferable for the usual complications of peptic ulcer? Is vagotomy or gastrectomy performed as for adults?* *J. A. Mishkin, M.D., Watertown, N. Y.*

This inquiry was referred to two consultants whose respective replies follow.—Ed.

Answer.—The prognosis is good for a child of 6 years with duodenal ulcer. One of the longest follow-up studies was reported by Block (*Am. J. Digest. Dis.* 4:15, 1937). He followed four children for several years; three did well; but one required operation. The surgical indications are perforation, mechanical obstruction, and hemorrhage with exsanguination. The results are good. The operation should be left to the discretion of the surgeon as each condition warrants, although according to Ladd and Gross resections are usually unnecessary in the young. There are no more physiological effects on the child than on the adult.

Answer.—The prognosis of a 6-year-old child with a duodenal ulcer is excellent with respect to the immediate healing of the lesion under adequate medical treatment. The prospect of subsequent recurrence depends on the level of the gastric secretion, both in the interdigestive period and in response to food taking. In the case of duodenal ulcer the fasting or interdigestive secretion seems to be the more important. A quantitative estimation of the nocturnal gastric secretion can be made by aspirating the gastric content of the fasting stomach between 9 p. m. and 9 a. m. the next day. During this time the child should be shielded from the sight, the odor, or the taste of food. The gastric secretion should be collected, its volume measured, and free acid titrated in the usual way. If the volume is expressed in liters and the free acid in clinical units, the product of the two gives the amount of free hydrochloric acid put out by the stomach in a 12 hour period expressed in terms of milliequivalents. Under normal conditions this output varies between 10 and 20 mEq. Much higher values are found in most patients with duodenal ulcer. When values higher than 75 mEq. are found, recurrence of the lesion is especially apt to take place on cessation of medical treatment. Surgery may then be advised, and the operations to consider are vagotomy combined with posterior gastroenterostomy or a relatively conservative gastric resection in which not more than about one-half of the lower part of the stomach is removed. A more extensive gastric resection is not advisable, because the interference with digestion may produce some impairment in growth. Perforation is, of course, an indication for immediate surgical treatment that should involve laparotomy with closure of the perforation and careful peritoneal cleansing. Decompression of the stomach should then be carried out. Treatment of a perforated duodenal ulcer in childhood by gastric suction alone is probably not advisable because of the hazard of peritonitis from foreign material left within the abdomen as a result of the perforation. Most bleeding peptic ulcers in childhood can be satisfactorily treated by

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

blood transfusions and medical management. If severe and persistent bleeding occurs, operation may be indicated; and in this case removal of the lower half of the stomach should be done, with reconstruction of the alimentary tract by anastomosis of the stump of stomach with the duodenum, if this is at all feasible. Twenty-five year follow-up statistics are not yet available concerning either the medical or surgical treatment of duodenal ulcer in childhood. A good account of this problem is given in the chapter, "Gastric and Duodenal Ulcer in Infants and Children," by Kennedy and Dushane in "Peptic Ulcer," published by the American Gastroenterological Association under the editorship of Sandweiss, 1951.

CIRRHOSIS OF THE LIVER

To the Editor:—*Cortisone and corticotropin (ACTH) supposedly have a fibrolytic effect. Have these drugs been used in the alleviation or treatment of cirrhosis of the liver? Are these drugs contraindicated in the presence of hepatic disease, such as viral hepatitis, obstructive jaundice with or without liver damage, and known cirrhosis of the liver?*

M.D., California.

Answer.—Cortisone and corticotropin (ACTH) have been used in the treatment of cirrhosis of the liver. A reduction in the amount of periportal fibrosis, as shown by needle biopsy before and after corticotropin therapy, has been reported but is not regularly found. In general these hormones are effective in preventing fibrosis rather than reversing the process. The usefulness of corticotropin and cortisone in chronic liver disease results from their ability to stimulate the appetite and sense of well-being. This effect is temporary and lasts only as long as the medication is continued. Patients with cirrhosis are more susceptible to the side-effects of treatment, especially those concerned with salt and water retention such as edema and ascites. Serious complications including portal vein thrombosis have been reported. Corticotropin and cortisone are not contraindicated in the presence of liver disease and have limited usefulness in severe viral hepatitis because of their ability to stimulate the appetite and reduce toxicity. The serum bilirubin level is usually lowered during treatment. There has been little experience with cortisone or corticotropin in obstructive jaundice. The hormones will control severe pruritus in some cases, but appear to have no other beneficial effect.

TREATMENT OF RICKETS

To the Editor:—*A 13-year-old boy apparently has rickets of rapid growth, and he has had pigeon breast for the last two years. What is the therapeutic dose of vitamin D? What is the safe amount of vitamin A that can be given to a child over many months? Is vitamin A necessary in the treatment of rickets? If not, what vitamin D preparation is best for the treatment of this ailment?*

M.D., Illinois.

Answer.—It is assumed that other evidence of rickets is present than that which is enumerated and that you have ruled out renal disease and metabolic disorders that might interfere with mineral metabolism. There are other causes beside rickets for pigeon breast. The therapeutic dose of vitamin D varies with the severity of the rachitic process one is treating. Sixteen hundred international units of vitamin D are adequate for the cure of mild rickets, while advanced cases may require 5,000 I. U. daily. In patients with Vitamin D refractory rickets, 50,000 to 100,000 I. U. a day may be required before healing takes place. Such doses are potentially toxic, and the patient must be carefully watched for evidence of hypervitaminosis. The amount of vitamin A recommended for the prevention of deficiency symptoms due to this vitamin is 1,500 I. U. daily for infants and 2,000 to 5,000 I. U. for older children. Children on a low fat diet or those with disorders of fat absorption may require 20,000 to 50,000 I. U. daily. Therapeutic doses of vitamin A (in the absence of a defect of fat absorption) range from 10,000 to 20,000 I. U. daily. The level of toxic doses for short or long periods of time has not been accurately determined. Signs of hypervitaminosis have been observed after administration of 100 times the recommended daily dose for a year or more. While toxic doses are not recommended, apparently healthy children have tolerated levels of intake approximating such high levels for several months without ill effects. Vitamin A is not necessary for the treatment of rickets in the specific sense, in that cure of the rachitic process may be achieved with vitamin D alone. However, since vitamin A is essential to a normal nutritional state, especially growth and the integrity of epithelial cells, it should always be included in the diet. Endochondral ossification may cease during a severe vitamin A deficiency.

There are many concentrated preparations of Vitamin D that are effective in the treatment of rickets. In general, they fall into three groups: cod liver oil concentrates (6,000 I. U. per gram), fish liver oils of high potency such as percomorph liver oil (8,500 I. U. per gram), and vitamin D in vegetable oils or propylene glycol (10,000 units per gram). The fish liver oil concentrates are excellent sources of vitamin A as well as D, and for practical purposes one may assume that 40 drops of the oily concentrates correspond to 1 gm. Accordingly, one may not wish to use fish liver oil concentrates when using large doses of vitamin D, since the dosage of vitamin A may be excessive. In such circumstances, pure vitamin D preparations are employed. If pure vitamin D preparations are used, vitamin A from some other source must be provided. The pure vitamin D preparations are also used for children who do not like the taste of fish liver oils or are allergic to them.

HYPERSENSITIVITY TO COLD

To the Editor:—*A 35-year-old man complains that the toes and heels of his feet are abnormally subject to cold and blanch more easily than they did several years ago. He attributes this condition to frequent exposure during one icy winter, but he certainly never had a frank case of frostbite. So sensitive are his feet to cold that he cannot swim in the ocean, even in summer, for very long before he has to leave the water to warm his feet. Can anything be done to benefit this condition? Is he more likely to lose his toes through an arteriosclerotic process in old age than would a normal person?*

M.D., Massachusetts.

This inquiry was referred to two consultants whose respective replies follow.—Ed.

Answer.—The neurocirculatory symptoms may be due to primary peripheral hypersensitivity to cold, peripheral hypervasoconstriction resulting from excessive loss of body heat, or early stage of thromboangiitis obliterans (Buerger's disease).

Local hypersensitivity of the toes and feet to cold could follow frequent exposure to cold without definite frostbite. Troublesome itching and burning occurs with the ischemic changes. There is a tendency for the attacks to lessen in severity over a period of years instead of increasing as occurred in this case. Tobacco smoking will aggravate the severity of the peripheral vasoconstriction. Excessive loss of body heat due to exposure to cold weather or water and evaporation from the body surface, especially with high wind velocity, will result in a physiological response of hypervasoconstriction in the extremities in order to retain body heat. Low body metabolism or poor body nutrition will contribute further to the response. In this situation all four extremities would react symmetrically except for the added exposure of the feet.

The age and sex of the patient and the clinical description suggest the early neurocirculatory component of thromboangiitis obliterans. The insidious onset is typical and is associated with heavy smoking. Peripheral arterial pulsation may be present. Many patients recall similar early experiences before the onset of serious symptoms of peripheral circulatory deficiency. Treatment should be directed to conserving body heat and preventing peripheral vasoconstriction. Exposure to cold, windy, or moist weather or immersion in cold water, tobacco smoking, and improperly fitting tight shoes should be avoided. If the basal metabolism is low, thyroid medication will increase heat production. The presence of anemia should be corrected. Lumbar sympathectomy is not indicated for this stage. Vasodilator drugs may be beneficial. Since atherosclerosis occurs in most cases of thromboangiitis obliterans, the possibility of loss of toes due to this cause would be greater than in a normal person. Dietary restrictions of animal fat (low cholesterol diet) should be followed as a long-term program. Although the total

blood cholesterol level is low (under 200 mg. per 100 cc.) while patients with thromboangiitis obliterans are on a low fat diet, elevation to 300 mg. per 100 cc. or more is not unusual when dietary restrictions are neglected.

ANSWER.—Cold-sensitivity is a symptom of many disorders, some of which might become apparent on a systematic physical examination. Anemias of different types, low basal metabolism, neurocirculatory asthenia, and cold-agglutination of red blood cells with precipitation of certain globulins on exposure to cold (cryoglobulins) come to mind. If the patient exhibits a high vascular tone and the response of his blood pressure to a cold pressor test is exaggerated, his vasomotor apparatus may be overactive. It is assumed, however, that the other parts of the body, notably the hands, nose, and ears do not show such phenomena and thus the abnormal pallor from cold is a local phenomenon. This may occur as a result of local chilling, immersion in cold water (immersion limb), or peripheral neuropathy as produced by radiculitis, diabetes, or vitamin deficiency. Diseases of the central nervous system must be ruled out. No treatment should be prescribed until a definite cause is ascertained, but smoking seems foolish in the presence of such an increased functional activity of the terminal vascular bed.

TRAUMATIC ARTHRITIS

TO THE EDITOR:—*It has been said that no one recovers from traumatic arthritis and that sequelae are always found objectively and especially on x-ray examination. This theory I doubt. If after a period of disability as the result of established traumatic arthritis of a given joint degenerative or hypertrophic arthritis develops, can this later condition be in any way the result of the previous traumatic arthritis?*

George J. Korby, M.D., Detroit.

ANSWER.—Whether recovery ensues after trauma to a joint depends entirely on the severity of the blow and the character of changes caused in cartilages and underlying bone. Recovery may be complete if damage is confined to capsule or soft tissues, but degenerative (hypertrophic) arthritis may indeed develop if the original blow is of such severity as to fracture cartilage or crush subchondral bony parts.

The term "traumatic arthritis" is now customarily used to designate either of two varieties of joint disease. Both result from blows, and the pathological changes are the same in both. The distinction lies in the severity of the injury and the manner in which the injury is sustained. One variety of traumatic arthritis results from massive damage incurred through externally applied violence, as when a joint is struck a hard blow with a hammer. The second type results from repeated minor blows applied internally, by the act of weight-bearing in very fat persons. Certain occupations expose joints to repeated internal violence, for example, working with the air hammer and carrying very heavy loads.

In either instance, the clinical picture depends on the severity of the injury and the intensity of the resulting pathological change. A massive blow, by causing disorganization within the joint, will in all likelihood result in a rough irregular joint surface when healing is completed. This type of rough surface acts as a rasp during subsequent use. Remaining cartilage will be more or less rapidly worn away by this rasping action, and subchondral bone will respond by thickening and marginal spur formation. The end-result of this type of traumatic arthritis is indistinguishable from hypertrophic arthritis of the primary or spontaneously occurring type.

SKIN DISINFECTION WITH ALCOHOL

TO THE EDITOR:—*How many ounces of distilled water should be added to a quart of commercially pure alcohol to secure a mixture of the maximum bactericidal strength? This, I assume, would also be the optimum mixture for use as a rubbing alcohol.*

W. H. Ross, M.D., El Paso, Texas.

ANSWER.—The question of the maximum effective concentration of ethyl alcohol to be used for skin disinfection has been studied by Price (*Arch. Surg.* **60**:492 [March] 1950). By employing the serial basin technique, a procedure which simulates actual conditions of use, he has demonstrated that the disinfectant action of solutions of alcohol on the skin increases as the concentration is increased up to 70% by weight; greater concentrations exhibited no increased effectiveness. On the basis of these results, Price recommends 70% alcohol by weight for routine surgical use. For all practical purposes, a solution of alcohol, 70% by weight, may be prepared by mixing 9 oz. (266 ml.) of distilled water with 1 qt. (946 ml.) of absolute alcohol.

SENSITIVITY TO MORPHINE

TO THE EDITOR:—*A patient is extremely sensitive to morphine. He is also subject to gallstone colic and during an acute attack must suffer without relief from any medication. Recently surgery was decided on, and 100 mg. of meperidine (Demerol) hydrochloride was administered just prior to the patient's entrance to the operating room, and 20 minutes after the injection he went into shock. The surgeon decided not to remove the gallbladder and stones. The patient's trouble has continued, and I wonder if relief could be obtained from a combination of morphine and nalorphine (Nalline) hydrochloride during an attack of biliary colic. Perhaps, this therapy could be resorted to for just operative pain.*

M.D., New York.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—It is not absolutely certain whether the patient has a heightened pharmacological sensitivity (idiosyncrasy) to morphine or a true allergy. The former is most likely since he also reacts to meperidine. Nalorphine combats the sedative, analgesic, and other pharmacological effects of morphine. Hence its use under the circumstances would only be helpful to neutralize the effects of morphine but would not permit the effective use of the latter. It is suggested that another analgesic, such as methadone, be tried, at first with reduced amounts.

ANSWER.—It is not definitely known whether nalorphine will block the pain-relieving action of morphine and similar drugs in man. The problem is under investigation in a number of centers. In experimental animals, nalorphine does block the elevating effects of analgesic drugs that elevate the pain threshold. However, determination of the pain threshold in animals involves the measurement of a reflex that is mediated in great part through the spinal cord; hence, what is termed "analgesia" in the experimental animal does not necessarily correspond to pain relief in the human patient. Even if the combination of morphine and nalorphine would relieve pain due to biliary colic, such therapy should not be continued for any period of time since it is also not known whether combinations of morphine and nalorphine would be addicting. Furthermore, complications such as obstruction of the common bile duct might occur. Definitive surgical therapy should be undertaken. It could probably be accomplished by using scopolamine rather than an opiate for preoperative medication. Postoperative pain might be relieved by small intravenous doses of a barbiturate or by very small doses of morphine. A competent anesthesiologist should be able to work out the problem.

"TRUTH SERUM"

TO THE EDITOR:— *What drug constitutes the so-called truth serum, used by certain psychiatrists and law agencies? Is this a procedure with results based on adequate experience? What is the dosage?*

H. M. F. Behneman, M.D., Laguna Beach, Calif.

ANSWER.—What is called truth serum today is thiopental (Pentothal) sodium. The dosage varies with each patient who is brought to the point short of sleep during which he is able to talk. A needle should be kept in the vein in order to maintain the adequate stage. No court of law has accepted the results of such interviews as evidence. There are too many false confessions or suppressed material to make the procedure always reliable.

MAGNESIUM DUST

To the Editor:—*I have been requested by the head of an engravers' union to render an opinion as to any dangers that may result from the inhalation of magnesium dust. It seems that the use of magnesium in the printing industry is new. The men complain that a fine dust is generated that discolors any sputum they cough up. Do you have any information on this problem?* *Marvin A. Jochimsen, M.D., Milwaukee.*

Answer.—In any trade in which metallic magnesium is melted or boiled, the inhaled fumes readily may lead to metal fume fever. The inhalation of magnesium dust is not known to be physiologically injurious, although any harmless dust in high concentration is objectionable as a nuisance. In any trade in which the manipulation of metallic magnesium gives rise to shavings or splinters, there is practical risk from the gases evolved from the imbedded splinters within the flesh. The outstanding damage from magnesium dust is from fires and explosions. Although the oxide of magnesium is white, finely divided metallic magnesium dust, presumably oxidizing, is blackish. This may be the source of the discoloration mentioned. It is not known that the mere discoloration of sputum by magnesium involves any physiological affront.

CONTACT LENSES AND FOOTBALL

To the Editor:—*Is the wearing of contact lenses while playing football considered safe? A patient who plays football has been wearing a molded rubber goggle that is not entirely satisfactory.* *Mark W. Devine, M.D., Topeka, Kan.*

Answer.—Several football players have worn contact lenses without injury to the eyes; however, one cannot escape the hazard of the hard contact lens, glass or plastic, in case of a direct blow to the face, and the eye could easily suffer severe damage. Besides the danger of injury from a blow to the eye, there is danger of corneal epithelial erosion incident to the wearing of contact lenses in general. Under the physical stress of football the danger of corneal erosion is increased. The wearing of a contact lens while playing football is permissible on the basis of experience and may be considered safe for a player who is accustomed to wearing contact lenses and can do so without local irritation.

EPILEPSY

To the Editor:—*I would appreciate information concerning the excretion of diphenylhydantoin (Dilantin) sodium in mothers' milk. I have had an epileptic patient who has been anxious to breast feed, and she has been on a maintenance dose of diphenylhydantoin sodium.*

Louis H. Schinfeld, M.D., Philadelphia.

Answer.—No apparent deleterious reactions have been observed in breast-fed babies of mothers being treated with diphenylhydantoin sodium. Twenty-eight epileptic mothers fed their babies breast milk for periods ranging from three to nine months. These mothers were receiving daily maintenance doses of diphenylhydantoin sodium, varying from 100 mg. three times a day to 200 mg. three times a day. No adverse reactions, including drowsiness or lethargy, were encountered in any of these babies.

FACIAL PARALYSIS IN INFANT

To the Editor:—*A difficult delivery came through as a face presentation, and the forceps were used. Since birth the baby has had a paralysis of the right facial muscles. The mother thinks that the deformity is not as pronounced as it was. What is the prognosis?*

Robert E. Littlejohn, M.D., Sequim, Wash.

Answer.—The facial paralysis in this infant is most likely the result of the marked extension of the head during labor and delivery. It is rarely due to intracranial causes. When it is central in origin, it is usually the result of congenital defects and the paralysis is bilateral in distribution. The prognosis for complete recovery in this baby is excellent. No treatment is indicated.

INTERNAL SQUINT

To the Editor:—*Are there any physical contraindications to plastic surgery for purely cosmetic reasons for internal squint in an adult who has successfully adjusted to the handicap in his profession? Is there any possibility of visual difficulty becoming worse after corrective surgery; is blindness a possibility; if so, what are the chances? Is there any consensus of effectiveness (psychologically) of such surgery? Also would external strabismus be considered a special problem in this situation? The patient in question is a surgeon, aged 37.*

M.D., Arkansas.

Answer.—There is no organic contraindication to ocular muscle surgery at any age. Blindness is not a possibility, and there need be no concern because of this. Rarely, when eyes have been crossed for many years, a deep-seated anomaly exists in which corresponding areas of the retina are not superimposed within the brain. When the eyes are made parallel, an intolerable diplopia results in a small percentage of these patients. This condition is well recognized by ophthalmic surgeons, and, if the surgeon is sure that its development is not likely, there need be no particular concern regarding it. Correction of crossed eyes is frequently the most effective cosmetic surgery done, but the psychological effect has not been described in immediately available ophthalmic literature. An exotropia affords no particularly different problem than an esotropia. Usually vision tends to be better in each eye in an exotropia, and the cosmetic defect is not as marked.

X-RAY BURN OF FINGER

To the Editor:—*A patient has an old x-ray burn on his left ring finger, just above the fingernail, and it has been troubling him at intervals for years. Everything has been used on it. It gets better then gets worse. Will anything help?*

M.D., Missouri.

Answer.—The patient is advised to consult a competent surgeon for wide surgical excision of the lesion and repair of the defect with skin grafting. This consultant advises against any other form of treatment.

AURICULAR FIBRILLATION

To the Editor:—*In the query concerning the treatment of auricular fibrillation, in* The Journal, *April 10, 1954, page 1320, advice was given to abolish the fibrillation by means of digitalization. It was also stated that as long as fibrillation exists the heart is not compensated. I would like to point out that the purpose of the use of digitalis in auricular fibrillation is not to abolish the abnormal rhythm but to control the ventricular rate. If one wishes to convert auricular fibrillation to sinus rhythm, quinidine is far more efficient than digitalis. Many patients have chronic auricular fibrillation with a slow ventricular rate and are well compensated, requiring no drug therapy of any kind.*

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To the Editor:—*In reply to the question on auricular fibrillation in* The Journal, *April 10, 1954, page 1320, it was stated that an attempt to abolish fibrillation and restore normal sinus rhythm should be made through digitalization. There is no reference to the use of quinidine. Digitalis will rarely convert an auricular fibrillation to a normal sinus rhythm; rather, it tends to perpetuate the fibrillation. The rationale in the use of digitalis in auricular fibrillation is to decrease the ventricular rate by decreasing the conduction through the auriculoventricular node and indirectly by increasing the cardiac output. Quinidine is the drug of choice if conversion to normal sinus rhythm is attempted. Anticoagulant therapy may be instituted a few weeks prior to starting quinidine as a prophylactic measure against embolization.*

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